# 1996 AUTHOR INDEX


ABBOTT, Sean P.: Assessment of Worker Exposure to Airborne Molds in Honeybee Overwintering Facilities, 484

ADER, Allan W.: Development of Pituitary Lesions in ND4 Swiss Webster Mice When Estimating the Sensory Irritancy of Airborne Chemicals Using ASTM Method E981-84, 712

ARDMAN, Margarett R.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634

ARMSTRONG, B.: Inorganic Particles in the Lungs of Five Aluminum Smelter Workers with Pleuro-Pulmonary Cancer, 370

ARMSTRONG, Thomas J.: Effects of Key Stiffness on Force and the Development of Fatigue While Typing, 849

ARMSTRONG, Thomas W.: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333

ARNOLD, James E.: Development of a Novel Derivatization Reagent for the Sampling and Analysis of Total Isocyanate Group in Air and Comparison of its Performance with that of Several Established Reagents, 905

ASHLEY, Kevin: Evaluation of a Chemical Spot-Test Kit for the Detection of Airborne Particulate Lead in the Workplace, 161

AUBERTIN, Gérard: A Numerical Study of Dispersion and Local Exhaust Capture of Aerosols Generated from a Variety of Sources and Airflow Conditions, 134

AUBRUN, J.C.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153

AVIADO, Domingo M.: Cardiovascular Disease and Occupational Exposure to Environmental Tobacco Smoke, 285

BARNARD, Anthony E.: Retrospective Beryllium Exposure Assessment at the Rocky Flats Environmental Technology Site, 804

BARON, Paul A.: Application of the Thoracic Sampling Definition to Fiber Measurement, 820

BARON, Paul A.: Aspiration Efficiency and Inlet Wall Deposition in the Fiber Sampling Cassette, 142

BAUMAN, Thomas R.: Oral and Tympanic Temperatures as Heat Strain Indicators for Workers Wearing Chemical Protective Clothing, 344

BEAIRD, Janis S.: Oral and Tympanic Temperatures as Heat Strain Indicators for Workers Wearing Chemical Protective Clothing, 344

BECKER, Gail T.: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33

BÉGIN, R.: Inorganic Particles in the Lungs of Five Aluminum Smelter Workers with Pleuro-Pulmonary Cancer, 370

BEMER, Denis: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996

BENNETT, James S.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599

BERGER, Elliott H.: Technology Advancements in Hearing Protection Circa 1995: Active Noise Reduction, Frequency/Amplitude-Sensitivity, and Uniform Attenuation, 175

BERGMAN, Thomas A.: Occupational Exposure of Nonsmoking Nightclub Musicians to Environmental Tobacco Smoke, 746

BERO, Bridget N.: The Effectiveness of the Freeze Fracture Carpet Grinding Technique in the Determination of Total Lead, 480

BHAMBHANI, Y.: Effects of 5 ppm Hydrogen Sulfide Inhalation on Biochemical Properties of Skeletal Muscle in Exercising Men and Women, 464

BHATTACHARYA, Amit: Effect of Workers' Shoe Wear on Objective and Subjective Assessment of Slipperiness, 825

BIGELOW, Phillip L.: Variability in Biological Exposure Indices Using Physiologically Based Pharmacokinetic Modeling and Monte Carlo Simulation, 23

BISHOP, M.J.: Exposures to Inhalable and 'Total' Oil Mist Aerosol by Metal Machining Shop Workers, 1149

BISHOP, Phillip A.: A Review of the Suggested Wet Bulb Globe Temperature Adjustment for Encapsulating Protective Clothing, 58

BISHOP, Phillip A.: Validation of a Personal Heat Stress Monitor, 650

BJØRSETH, Olav: Sampling Petroleum Oil Mist and Vapor; Comparison of Methods, 537

BOARETTO, Caterina: High Uptake Rate Radial Diffusive Sampler Suitable for Both Solvent and Thermal Desorption, 897

BOATRIGHT, Daniel T.: Occupational Exposure of Nonsmoking Nightclub Musicians to Environmental Tobacco Smoke, 746

BOINAY, P.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153

BØRRESEN, Eli: Sampling Petroleum Oil Mist and Vapor; Comparison of Methods, 537

BOUNDY, Maryanne G.: Laboratory Measurements of Oil Mist Concentrations Using Filters and an Electrostatic Precipitator, 1137

BOUNDY, Maryanne G.: Performance of Industrial Equipment to Collect Coolant Mist, 1142

BOWES, Stephen M., III: Volatile Hydrocarbon Exposure During In Situ Burning of Crude oil at Sea, 62

BOWES, Stephen M.: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333

BOWMAN, Elicia K.: Quantitation of Free-Living Amoebae and Bacterial Populations in Eyewash Stations Relative to Flushing Frequency, 626

BRAUN, Karl O.: Evaporation of a Liquid in a Flowing Airstream, 519

BREYSSE, Patrick N.: The Effect of Vapor Polarity and Boiling Point on Breakthrough for Binary Mixtures on Respirator Carbon, 717

BROSSEAU, L.M.: Exposures to Inhalable and 'Total' Oil Mist Aerosol by Metal Machining Shop Workers, 1149

BURLEIGH-FLAYER, Heather D.: Development of Pituitary Lesions in ND4 Swiss Webster Mice When Estimating the Sensory Irritancy of Airborne Chemicals Using ASTM Method E981-84, 712

BURNHAM, R.: Effects of 5 ppm Hydrogen Sulfide Inhalation on Biochemical Properties of Skeletal Muscle in Exercising Men and Women, 464

BUSCH, Kenneth: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444

CAREY, James J.: Decomposition of Thiocyanates During Electrolysis, 1044

CASALI, John G.: Technology Advancements in Hearing Protection Circa 1995: Active Noise Reduction, Frequency/Amplitude-Sensitivity, and Uniform Attenuation, 175

CHEN, Chih-Chieh: Aspiration Efficiency and Inlet Wall Deposition in the Fiber Sampling Cassette, 142

CHEN, Yi-Lang: An Isoinertial Predictor for Maximal Acceptable Lifting Weights of Chinese Male Subjects, 456

CHENG, W.K.: Laboratory Evaluation of Sampling Methods for $C_1$ to $C_4$ Hydrocarbons, 245

CHIOU, Shiow-yi: Effect of Workers' Shoe Wear on Objective and Subjective Assessment of Slipperiness, 825

COCHEO, Vincenzo: High Uptake Rate Radial Diffusive Sampler Suitable for Both Solvent and Thermal Desorption, 897

COOPER, Charles V.: Development of a Novel Derivatization Reagent for the Sampling and Analysis of Total Isocyanate Group in Air and Comparison of its Performance with that of Several Established Reagents, 905

COOPER, Steven J.: Performance of Industrial Equipment to Collect Coolant Mist, 1142

COOPER, Steven: Evaporation of Polydisperse Multicomponent Oil Droplets, 1128

COX, Leanne M.: The Medical and Epidemiologic Effects on Workers of the Levels of Airborne Thermoactinomyces Spp. Spores Present in Australian Raw Sugar Mills, 1002

CROUCH, Keith G.: Nitrous Oxide Control in the Dental Operatory: Auxiliary Exhaust and Mask Leakage, Design, and Scavenging Flow-Rate as Factors, 272

CUNNINGHAM, Elizabeth A.: Electron Microscopy Studies of Silica Fume Emissions from a Silicon Smelter in Southern Tasmania, Australia, 1024

DAHLQUIST, Bruce: Evaluation of 1-(9-anthracenylmethyl)piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914

DAWSON, Mark W.: The Medical and Epidemiologic Effects on Workers of the Levels of Airborne Thermoactinomyces Spp. Spores Present in Australian Raw Sugar Mills, 1002

DEKOSTER, Jeannine: Environmental Assessment of Aerosols, Bioaerosols, and Airborne Endotoxins in a Machining Plant, 1163

DEKOSTER, Jeannine: Pulmonary Effects of Machining Fluids in Guinea Pigs and Mice, 1168

DHARMARAJAN, Venkatram: Evaluation of Personal Continuous Paper-Tape Monitors for Toluenediisocyanate, 68

DOEKES, Gert: The Influence of Different Filter Elution Methods on the Measurement of Airborne Potato Antigens, 567

DOEMENY, Laurence: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444

DONNELLY, Jean: Penetration of Airborne Microorganisms Through a Surgical Mask and a Dust/Mist Respirator, 348

DOUTHIT, Donald E.: An Experimental Design Approach to Retrospective Exposure Assessment, 251

DRAKE, Frances: A Screening Method for Occupational Reproductive Health Risk, 641

DRANE, Wanzer: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599

DRUMMOND, Ian: Laboratory Evaluation of Sampling Methods for $C_1$ to $C_4$ Hydrocarbons, 245

DUFRESNE, A.: Inorganic Particles in the Lungs of

Five Aluminum Smelter Workers with Pleuro-Pulmonary Cancer, 370
DURKT, George Jr.: Evaluation of Muff-Type Hearing Protectors as Used in a Working Environment, 264
DYJACK, David T.: Critical Features of an ISO 9001/14001 Harmonized Health and Safety Assessment Instrument, 929
DYJACK, David T.: Development of an ISO 9000-Compatible Occupational Health Standard—III: Defining the Potential Benefits and Open Issues, 387

EBERIEL, David: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154
EDUARD, Wijnand: A Laboratory Method for Generation of Replicate Filter Samples of Asbestos Fibers in Air, 741
ELLER, Peter: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444
EMERICH, Ronald T.: Decomposition of Thiocyanates During Electrolysis, 1044
ENGLISH, Daniel R.: Decomposition of Thiocyanates During Electrolysis, 1044
ERNST, M. Kathleen: Development of a Novel Derivatization Reagent for the Sampling and Analysis of Total Isocyanate Group in Air and Comparison of its Performance with that of Several Established Reagents, 905
ESTILL, Cheryl Fairfield: Case Study: Control of Methylene Chloride Exposures During Furniture Stripping, 43
EVANS, John S.: Worker Exposure to Endotoxin, Phenolic Compounds, and Formaldehyde in a Fiberglass Insulation Manufacturing Plant, 889

FAJEN, John M.: Worker Exposures to Nitrosamines in a Rubber Vehicle Sealing Plant, 918
FEHRENBACHER, M. Catherine: Evaluation of the Mass Balance Model Used by the Environmental Protection Agency for Estimating Inhalation Exposure to New Chemical Substances, 526
FEHRENBACHER, M. Catherine: Evaporation of a Liquid in a Flowing Airstream, 519
FEIGLEY, C.E.: The Sampling Rates of Diffusive Samplers Measured in the Laboratory and in Simulated Use as Personal Samplers, 551
FEIGLEY, Charles E.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
FEIGLEY, Charles E.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
FELLIN, Philip: Laboratory Evaluation of Sampling Methods for $C_1$ to $C_4$ Hydrocarbons, 245
FENG, Amy: Laboratory and Analytical Method Performance of Lead Measurements in Paint Chips, Soils, and Dusts, 1035
FISCHBACH, Thomas J.: A Comparison of Conventional and High Volume-Low Pressure Spray-Painting Guns, 304
FISCHBACH, Thomas J.: Evaluation of a Chemical Spot-Test Kit for the Detection of Airborne Particulate Lead in the Workplace, 161
FISCHBACH, Thomas: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444
FISCHBACH, Thomas: Some Statistical Procedures for Analytical Method Accuracy Tests, 440
FLYNN, Michael R.: Experimental and Numerical Studies on the Impact of Work Practices Used to Control Exposures Occurring in Booth-Type Hoods, 469
FONTAINE, Jean Raymond: A Numerical Study of Dispersion and Local Exhaust Capture of Aerosols Generated from a Variety of Sources and Airflow Conditions, 134
FOULKE, James A.: Effects of Key Stiffness on Force and the Development of Fatigue While Typing, 849
FOWLER, Edward H.: Development of Pituitary Lesions in ND4 Swiss Webster Mice When Estimating the Sensory Irritancy of Airborne Chemicals Using ASTM Method E981-84, 712
FRASER, William J.: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33
FREEMAN, Caroline A.: Biological Monitoring Results for Cadmium Exposed Workers, 1019
FRICKER-HIDALGO, Hélène: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996

GARCÍA-SOSA, I.: Exposure to Total and Respirable Minerals in an Abrasive Manufacturing Facility, 753
GAUVREAU, Henry: Assessment of Worker Exposure to Airborne Molds in Honeybee Overwintering Facilities, 484
GAYDOS, Joel C.: Errors in Derivations of the Coburn-Forster-Kane Equation for Predicting Carboxyhemoglobin, 621
GERARD, Michael J.: Effects of Key Stiffness on Force and the Development of Fatigue While Typing, 849
GIARDINO, Dennis A.: Evaluation of Muff-Type Hearing Protectors as Used in a Working Environment, 264
GIESE, Ulrich: Chromatographic Characterization of Adsorbents for Selective Sampling of Organic Air Pollutants, 128
GOLDSHEYDER, David: Effect of Operator Seat Design on Vibration Exposure, 837
GOTO, Shigeru: Cobalt Exposure Level and Variability in the Hard Metal Industry of Japan, 365
GRANADOS-CORREA, F.: Exposure to Total and Respirable Minerals in an Abrasive Manufacturing Facility, 753
GREAVES, I.A.: Exposures to Inhalable and 'Total' Oil Mist Aerosol by Metal Machining Shop Workers, 1149
GREEBON, Kurt W.: Evaluation of 1-(9-anthracenylmethyl) piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914
GRILLOT, Renée: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996
GRINSHPUN, Sergey: Penetration of Airborne Microorganisms Through a Surgical Mask and a Dust/Mist Respirator, 348
GROFF, Jensen H.: Laboratory and Analytical Method Performance of Lead Measurements in Paint Chips, Soils, and Dusts, 1035
GROFF, Jensen H.: Performance of Laboratories Analyzing Organic Solvents in the Proficiency Analytical Testing Program, 295
GROSSMAN, Elizabeth A.: Biological Monitoring Results for Cadmium Exposed Workers, 1019
GROVES, William A.: Investigation of Organic Vapor Losses to Condensed Water Vapor in Tedlar® Bags Used for Exhaled-Breath Sampling, 257
GROVES, William A.: Prototype Instrument Employing a Microsensor Array for the Analysis of Organic Vapors in Exhaled Breath, 1103
GUILD, Lloyd V.: Experience in the Use of the NIOSH Diffusive Sampler Evaluation Protocol, 1115

HAMMOND, Katharine: Worker Exposure to Endotoxin, Phenolic Compounds, and Formaldehyde in a Fiberglass Insulation Manufacturing Plant, 889
HAMMOND, S. Katharine: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154
HANDS, David: Comparison of Metalworking Fluid Mist Exposures from Machining with Different Levels of Machine Enclosure, 1173
HARPER, Martin: Experience in the Use of the NIOSH Diffusive Sampler Evaluation Protocol, 1115
HAYES, Richard B.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
HAYES, Richard B.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
HEEDERIK, Dick: The Influence of Different Filter Elution Methods on the Measurement of Airborne Potato Antigens, 567
HEINONEN, Kimmo: Local Ventilation for Powder Handling—Combination of Local Supply and Exhaust Air, 356
HEITBRINK, William A.: A Comparison of Conventional and High Volume-Low Pressure Spray-Painting Guns, 304
HERRICK, Robert F.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
HERRICK, Robert F.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
HOLLANDER, Albert: The Influence of Different Filter Elution Methods on the Measurement of Airborne Potato Antigens, 567
HONG, Cheng: Adjusting the Evlauation Limit for Broad-Band Whole-Body Vibration, 476
HORNUNG, Richard W.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
HUMMEL, Albert A.: Evaluation of the Mass Balance Model Used by the Environmental Protection Agency for Estimating Inhalation Exposure to New Chemical Substances, 526
HUMMEL, Albert A.: Evaporation of a Liquid in a Flowing Airstream, 519
HUSER, Per Ole: A Laboratory Method for Generation of Replicate Filter Samples of Asbestos Fibers in Air, 741
HUSMAN, Tuula: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279
HYVÄRINEN, Anne: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279

IHLE, Robert: Occupant Generated Carbon Dioxide as a Measure of Dilution Ventilation Efficiency, 756
ITURBE-GARCÍA, J.L.: Exposure to Total and Respirable Minerals in an Abrasive Manufacturing Facility, 753

JABLONSKI, Wieslaw: Electron Microscopy Studies of Silica Fume Emissions from a Silicon Smelter in Southern Tasmania, Australia, 1024
JANKOVIC, John T.: Occupant Generated Carbon Dioxide as a Measure of Dilution Ventilation Efficiency, 756
JANKOVIC, John: A Screening Method for Occupational Reproductive Health Risk, 641
JENNISON, Elizabeth A.: Self-Reported Use of Respiratory Protection Among a Cohort of Underground Bituminous Coal Miners, 191

# 1996 Author Index


JIE, Wu: Adjusting the Evlauation Limit for Broad-Band Whole-Body Vibration, 476

JIMÉNEZ-REYES, M.: Selenium Levels in the Serum of Workers at a Rubber Tire Repair Shop, 72

JOHNSON, David L.: Occupational Exposure of Nonsmoking Nightclub Musicians to Environmental Tobacco Smoke, 746

JOHNSTON, Ova E.: Nitrous Oxide Control in the Dental Operatory: Auxiliary Exhaust and Mask Leakage, Design, and Scavenging Flow-Rate as Factors, 272

JONES, Robert B.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634

JÖNSSON, Bo A.G.: Direct Measurement of Hexahydrophthalic Anhydride in Workplace Air with a Transportable Fourier Transform Infrared Spectrometer, 832

KACERGIS, Julie B.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634

KALLIOKOSKI, Pentti: Exposure to Airborne Metals in the Manufacture and Maintenance of Hard Metal and Stellite Blades, 196

KALLIOKOSKI, Pentti: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279

KANGAS, Juhani: Exposure to Airborne Metals in the Manufacture and Maintenance of Hard Metal and Stellite Blades, 196

KEEFE, Thomas J.: Variability in Biological Exposure Indices Using Physiologically Based Pharmacokinetic Modeling and Monte Carlo Simulation, 23

KENNEDY, Eugene: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444

KENNEDY, Greg: Exposure of Taxi Drivers and Office Workers to Total and Respirable Manganese in an Urban Environment, 376

KING, M.E.: Apparent Versus Real Exposures of Nuclear Medicine Technologists During Aerosol Lung Ventilation Scanning, 202

KIRK, G. David: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33

KLEIN, R.C.: Potential Health Hazards from Lead Shielding, 1124

KRIEBEL, David: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154

KROMHOUT, H.: An Investigation of Systematic Changes in Occupational Exposure, 724

KRYSTOFIAK, Sharon P.: Prediction of an Occupational Exposure Limit for a Mixture on the Basis of Its Components: Application to Metalworking Fluids, 239

KULMALA, Ilpo: Local Ventilation for Powder Handling—Combination of Local Supply and Exhaust Air, 356

KUMAGAI, Sinji: Cobalt Exposure Level and Variability in the Hard Metal Industry of Japan, 365

KUPPER, L.L.: An Investigation of Systematic Changes in Occupational Exposure, 724

KUPPER, Lawrence L.: On Strategies for Comparing occupational Exposure Data to Limits, 6

KUSAKA, Yukinori: Cobalt Exposure Level and Variability in the Hard Metal Industry of Japan, 365

L'ESPÉRANCE, Gilles: Exposure of Taxi Drivers and Office Workers to Total and Respirable Manganese in an Urban Environment, 376

LACKEY, Bradley D.: Experimental and Numerical Studies on the Impact of Work Practices Used to Control Exposures Occurring in Booth-Type Hoods, 469

LARA, Jaime: Respirator Cartridge Service-Life: Exposure to Mixtures, 809

LEE, Susan B.: Occupational Health and Safety in the Biotechnology Industry—A Survey of Practicing Professionals, 381

LEE, Tze-San: Prevalence Estimate of Elevated Pediatric Blood Levels: Two Air Force Bases, 610

LEE, Yung-Hui: An Isoinertial Predictor for Maximal Acceptable Lifting Weights of Chinese Male Subjects, 456

LEEPER, James D.: Oral and Tympanic Temperatures as Heat Strain Indicators for Workers Wearing Chemical Protective Clothing, 344

LEHOCKY, Alexander H.: Comparison of Respirable Samplers to Direct-Reading Real-Time Aerosol Monitors for Measuring Coal Dust, 1013

LEITH, David: Evaporation of Polydisperse Multicomponent Oil Droplets, 1128

LEITH, David: Laboratory Measurements of Oil Mist Concentrations Using Filters and an Electrostatic Precipitator, 1137

LEITH, David: Performance of Industrial Equipment to Collect Coolant Mist, 1142

LEITH, Frank A.: Laboratory Measurements of Oil Mist Concentrations Using Filters and an Electrostatic Precipitator, 1137

LEPLAY, A.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153

LEVINE, Steven P.: Critical Features of an ISO 9001/14001 Harmonized Health and Safety Assessment Instrument, 929

LEVINE, Steven P.: Development of an ISO 9000-Compatible Occupational Health Standard—III: Defining the Potential Benefits and Open Issues, 387

LEVINE, Steven: Conformance of ISO Occupational Safety and Health Management System Standards in Public-Sector Procurement Specifications to the GATT/WTO Requirements, 936

LICK, Henry B.: Comparison of Metalworking Fluid Mist Exposures from Machining with Different Levels of Machine Enclosure, 1173

LIN, Jenn-Der: Laboratory Testing of Three Direct Reading Dust Monitors, 557

LINDH, Christian H.: Direct Measurement of Hexahydrophthalic Anhydride in Workplace Air with a Transportable Fourier Transform Infrared Spectrometer, 832

LINNAINMAA, Markku: Exposure to Airborne Metals in the Manufacture and Maintenance of Hard Metal and Stellite Blades, 196

LOCKE, K.: Evaluation of 1-(9-anthracenylmethyl) piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914

LOOSEREEWANICH, P.: Inorganic Particles in the Lungs of Five Aluminum Smelter Workers with Pleuro-Pulmonary Cancer, 370

LORANGER, Sylvain: Exposure of Taxi Drivers and Office Workers to Total and Respirable Manganese in an Urban Environment, 376

LOWERY, Stephen N.: Decomposition of Thiocyanates During Electrolysis, 1044

LUNGU, C.T.: The Sampling Rates of Diffusive Samplers Measured in the Laboratory and in Simulated Use as Personal Samplers, 551

LYLES, Robert H.: On Strategies for Comparing occupational Exposure Data to Limits, 6

MACKOWSKI, Robert: Quantitation of Free-Living Amoebae and Bacterial Populations in Eyewash Stations Relative to Flushing Frequency, 626

MACLEAN, I.: Effects of 5 ppm Hydrogen Sulfide Inhalation on Biochemical Properties of Skeletal Muscle in Exercising Men and Women, 464

MADSEN, Uila: A Numerical Study of Dispersion and Local Exhaust Capture of Aerosols Generated from a Variety of Sources and Airflow Conditions, 134

MAÎTRE, A.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153

MARKEY, Daniel: Conformance of ISO Occupational Safety and Health Management System Standards in Public-Sector Procurement Specifications to the GATT/WTO Requirements, 936

MARRAS, William S.: Observations on the Relationship Between Key Strike Force and Typing Speed, 1109

MARTIN, Bernard J.: Effects of Key Stiffness on Force and the Development of Fatigue While Typing, 849

MARTIN, T.: Effects of 5 ppm Hydrogen Sulfide Inhalation on Biochemical Properties of Skeletal Muscle in Exercising Men and Women, 464

MARTONIK, John: Biological Monitoring Results for Cadmium Exposed Workers, 1019

MCDIARMID, Melissa A.: Biological Monitoring Results for Cadmium Exposed Workers, 1019

MCMAHAN, Shari: Communication of Rick Information to Workers and Managers: Do Industrial Hygienists Differ in Their Communication Techniques?, 186

MEYER, Jon'a: Communication of Rick Information to Workers and Managers: Do Industrial Hygienists Differ in Their Communication Techniques?, 186

MIKHAÏL, Mourad: Exposure of Taxi Drivers and Office Workers to Total and Respirable Manganese in an Urban Environment, 376

MILTON, Donald K.: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154

MILTON, Donald K.: Worker Exposure to Endotoxin, Phenolic Compounds, and Formaldehyde in a Fiberglass Insulation Manufacturing Plant, 889

MOURE-ERASO, Rafael: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154

MURRAY, Neil: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333

MUTHEDATH, Premkumar: Experimental and Numerical Studies on the Impact of Work Practices Used to Control Exposures Occurring in Booth-Type Hoods, 469

MYERS, Warren R.: Field Performance Measurements of Half Facepiece Respirators—Paint Spraying Operations, 50

MYERS, Warren R.: Field Performance Measurements of Half-Facepiece Respirators—Foundry Operations, 166

NAUMANN, Bruce D.: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33

NELSON, James H.: Respirator Cartridge Service-Life: Exposure to Mixtures, 809

NELSON, T.: Field Performance Measurements of Half-

Facepiece Respirators—Foundry Operations, 166
NELSON, T.J.: The Assigned Protection Factor According to ANSI, 735
NEVALAINEN, Aino: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279
NICAS, Mark: Estimating Exposure Intensity in an Imperfectly Mixed Room, 542
NICAS, Mark: Refining a Risk Model for Occupational Tuberculosis Transmission, 16
NICOLICH, Mark J.: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333
NIELSEN, Peter V.: A Numerical Study of Dispersion and Local Exhaust Capture of Aerosols Generated from a Variety of Sources and Airflow Conditions, 134
NORMAN, Sam: Evaluation of 1-(9-anthracenylmethyl) piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914

ODENCRANTZ, John R.: Self-Reported Use of Respiratory Protection Among a Cohort of Underground Bituminous Coal Miners, 191
OHL, G.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153
OHMAN, John L.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634
OWEN, Bruce A.: Quantitation of Free-Living Amoebae and Bacterial Populations in Eyewash Stations Relative to Flushing Frequency, 626
ÖZKAYA, Nihat: Effect of Operator Seat Design on Vibration Exposure, 837

PAIGEN, Beverly: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634
PARAT, Sylvie: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996
PARNIANPOUR, Mohamad: Observations on the Relationship Between Key Strike Force and Typing Speed, 1109
PAYNE, Theresa A.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
PEARLMAN, Eileen D.: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333
PELISSIER, Nathalie: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996
PERDRIX, A.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153
PERDRIX, Alain: Airborne Fungal Contamination in Air-Conditioning Systems: Effect of Filtering and Humidifying Devices, 996
PETRICK, Michelle E.: Comparison of Daily Noise Exposures in One Workplace Based on Noise Criteria Recommended by ACGIH and OSHA, 924
PETSONK, Edward L.: Self-Reported Use of Respiratory Protection Among a Cohort of Underground Bituminous Coal Miners, 191
PITYN, P.J.: Apparent Versus Real Exposures of Nuclear Medicine Technologists During Aerosol Lung Ventilation Scanning, 202
PLESE, Marcia R.: Evaluation of Real-Time Techniques to Measure Hydrogen Peroxide in Air at the Permissible Exposure Limit, 843
PUSKAR, Mark A.: Evaluation of Real-Time Techniques to Measure Hydrogen Peroxide in Air at the Permissible Exposure Limit, 843
QIAN, Yinge: Penetration of Airborne Microorganisms Through a Surgical Mask and a Dust/Mist Respirator, 348

RANDO, Roy J.: Occupational Exposure of Nonsmoking Nightclub Musicians to Environmental Tobacco Smoke, 746
RAPPAPORT, S.M.: An Investigation of Systematic Changes in Occupational Exposure, 724
RAUTIALA, Sirpa: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279
RAYNOR, Peter C.: Evaporation of Polydisperse Multicomponent Oil Droplets, 1128
RAYNOR, Peter C.: Performance of Industrial Equipment to Collect Coolant Mist, 1142
REDINGER, Charles: Conformance of ISO Occupational Safety and Health Management System Standards in Public-Sector Procurement Specifications to the GATT/WTO Requirements, 936
REEB, Carolyn K.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634
REH, Beth Donovan: Worker Exposures to Nitrosamines in a Rubber Vehicle Sealing Plant, 918
REIST, Parker: Comparison of Daily Noise Exposures in One Workplace Based on Noise Criteria Recommended by ACGIH and OSHA, 924
RENEAU, Paul D.: A Review of the Suggested Wet Bulb Globe Temperature Adjustment for Encapsulating Protective Clothing, 58
RENEAU, Paul D.: Validation of a Personal Heat Stress Monitor, 650
REPONEN, Tiina: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279
RICHARDSON, Andy: Evaluation of 1-(9-anthracenylmethyl) piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914
RILEY, T.D.: The Sampling Rates of Diffusive Samplers Measured in the Laboratory and in Simulated Use as Personal Samplers, 551
ROBBINS, Coreen A.: The Effect of Vapor Polarity and Boiling Point on Breakthrough for Binary Mixtures on Respirator Carbon, 717
ROETS, Francois J.: Noise Exposure of Truck Drivers: A Comparative Study, 564
ROMAZINI, S.: Comparison Between Solid Sampler and Impinger for Evaluation of Occupational Exposure to 1,6-Hexamethylene Diisocyanate Polyisocyanates During Spray Painting, 153
ROYSTER, Julia Doswell: Comparison of Daily Noise Exposures in One Workplace Based on Noise Criteria Recommended by ACGIH and OSHA, 924
ROYSTER, Larry H.: Comparison of Daily Noise Exposures in One Workplace Based on Noise Criteria Recommended by ACGIH and OSHA, 924
RUDZINSKI, Walter E.: Evaluation of 1-(9-anthracenylmethyl)piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914
RYAN, Leo J., Jr.: Occupational Health and Safety in the Biotechnology Industry—A Survey of Practicing Professionals, 381
RYBKA, Michelle L.: Development of Pituitary Lesions in ND4 Swiss Webster Mice When Estimating the Sensory Irritancy of Airborne Chemicals Using ASTM Method E981-84, 712

SÄÄMÄNEN, Arto: Local Ventilation for Powder Handling—Combination of Local Supply and Exhaust Air, 356
SACCO, Paolo: High Uptake Rate Radial Diffusive Sampler Suitable for Both Solvent and Thermal Desorption, 897
SAMA, Susan R.: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154
SÁNCHEZ-OCAMPO, A.: Selenium Levels in the Serum of Workers at a Rubber Tire Repair Shop, 72
SARGENT, Edward V.: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33
SCHAPER, Michelle M.: Prediction of an Occupational Exposure Limit for a Mixture on the Basis of Its Components: Application to Metalworking Fluids, 239
SCHLECHT, Paul C.: Laboratory and Analytical Method Performance of Lead Measurements in Paint Chips, Soils, and Dusts, 1035
SCHLECHT, Paul C.: Performance of Laboratories Analyzing Organic Solvents in the Proficiency Analytical Testing Program, 295
SCHNATTER, A. Robert: Retrospective Benzene and Total Hydrocarbon Exposure Assessment for a Petroleum Marketing and Distribution Worker Epidemiology Study, 333
SCHUSTER, Robert H.: Chromatographic Characterization of Adsorbents for Selective Sampling of Organic Air Pollutants, 128
SCOTT, John G.: The Medical and Epidemiologic Effects on Workers of the Levels of Airborne Thermoactinomyces Spp. Spores Present in Australian Raw Sugar Mills, 1002
SEMBOWER, Karen: Self-Reported Use of Respiratory Protection Among a Cohort of Underground Bituminous Coal Miners, 191
SHEEHAN, Maura: Comparison of Metalworking Fluid Mist Exposures from Machining with Different Levels of Machine Enclosure, 1173
SHERWOOD, R. Jerry: The Relationships Between Urinary Elimination, Airborne Concentration, and Radioactive Hand Contamination for Workers Exposed to Uranium, 615
SHIH, Tung-Sheng: Laboratory Testing of Three Direct Reading Dust Monitors, 557
SHULMAN, Stanley A.: Performance of Laboratories Analyzing Organic Solvents in the Proficiency Analytical Testing Program, 295
SHULMAN, Stanley: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444
SHULMAN, Stanley: Some Statistical Procedures for Analytical Method Accuracy Tests, 440
SIGLER, Lynne: Assessment of Worker Exposure to Airborne Molds in Honeybee Overwintering Facilities, 484
SKOGSTAD, Asbjørn: A Laboratory Method for Generation of Replicate Filter Samples of Asbestos Fibers in Air, 741
SMALLWOOD, Karen G.: Occupational Exposure of Nonsmoking Nightclub Musicians to Environmental Tobacco Smoke, 746
SMITH, Steven R.: Errors in Derivations of the Coburn-Forster-Kane Equation for Predicting Carboxyhemoglobin, 621

SNYDMILLER, G.: Effects of 5 ppm Hydrogen Sulfide Inhalation on Biochemical Properties of Skeletal Muscle in Exercising Men and Women, 464
SOMMERICH, Carolyn M.: Observations on the Relationship Between Key Strike Force and Typing Speed, 1109
SONG, Ruiguang: Corrections to the Target and Critical Values for the National Institute for Occupational Safety and Health Validation Tests, 444
SONG, Ruiguang: Evaluation of a Chemical Spot-Test Kit for the Detection of Airborne Particulate Lead in the Workplace, 161
SONG, Ruiguang: Laboratory and Analytical Method Performance of Lead Measurements in Paint Chips, Soils, and Dusts, 1035
SONG, Ruiguang: Some Statistical Procedures for Analytical Method Accuracy Tests, 440
SPENCER, Amy Beasley: Case Study: Control of Methylene Chloride Exposures During Furniture Stripping, 43
STANETZEK, Ines: Chromatographic Characterization of Adsorbents for Selective Sampling of Organic Air Pollutants, 128
STARKMAN, Barry S.: Performance-Based Exposure Control Limits for Pharmaceutical Active Ingredients, 33
STEINBERG, Seymour: Errors in Derivations of the Coburn-Forster-Kane Equation for Predicting Carboxyhemoglobin, 621
STEWART, Patricia A.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
STEWART, Patricia A.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
STREICHER, Robert P.: Development of a Novel Derivatization Reagent for the Sampling and Analysis of Total Isocyanate Group in Air and Comparison of its Performance with that of Several Established Reagents, 905
SUBRAMANIAN, Periyasamy: Environmental Assessment of Aerosols, Bioaerosols, and Airborne Endotoxins in a Machining Plant, 1163
SUCCOP, Paul A.: Effect of Workers' Shoe Wear on Objective and Subjective Assessment of Slipperiness, 825
SVENDSEN, Kristin: Sampling Petroleum Oil Mist and Vapor; Comparison of Methods, 537
SYMANSKI, E.: An Investigation of Systematic Changes in Occupational Exposure, 724

TANG, You-Zhi: Laboratory Evaluation of Sampling Methods for $C_1$ to $C_4$ Hydrocarbons, 245
THÉRIAULT, G.: Inorganic Particles in the Lungs of Five Aluminum Smelter Workers with Pleuro-Pulmonary Cancer, 370
THOMAS, Russell S.: Variability in Biological Exposure Indices Using Physiologically Based Pharmacokinetic Modeling and Monte Carlo Simulation, 23
THOMAS, Tom: Evaluation of 1-(9-anthracenylmethyl) piperazine for the Analysis of Isocyanates in Spray-Painting Operations, 914
THORNE, Peter S.: Environmental Assessment of Aerosols, Bioaerosols, and Airborne Endotoxins in a Machining Plant, 1163
THORNE, Peter S.: Pulmonary Effects of Machining Fluids in Guinea Pigs and Mice, 1168
TODD, John J.: Electron Microscopy Studies of Silica Fume Emissions from a Silicon Smelter in Southern Tasmania, Australia, 1024
TORMA-KRAJEWSKI, Janet: Retrospective Beryllium Exposure Assessment at the Rocky Flats Environmental Technology Site, 804
TORRES-PÉREZ, J.: Selenium Levels in the Serum of Workers at a Rubber Tire Repair Shop, 72
TRAN, Quang: Laboratory Evaluation of Sampling Methods for $C_1$ to $C_4$ Hydrocarbons, 245
TSAI, Chuen-Jinn: Laboratory Testing of Three Direct Reading Dust Monitors, 557
TURNER, William A.: Air Quality in an Animal Facility: Particulates, Ammonia, and Volatile Organic Compounds, 634
TYNDALL, Richard L.: Quantitation of Free-Living Amoebae and Bacterial Populations in Eyewash Stations Relative to Flushing Frequency, 626

ULEVICIUS, Vidmantas: Penetration of Airborne Microorganisms Through a Surgical Mask and a Dust/Mist Respirator, 348
UNDERHILL, D.W.: The Sampling Rates of Diffusive Samplers Measured in the Laboratory and in Simulated Use as Personal Samplers, 551
UNDERHILL, Dwight W.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599
UTTERBACK, David F.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
UTTERBACK, David F.: Estimating the Contribution of Individual Work Tasks to Room Concentration: Method Applied to Embalming, 599

VAN DEN HEEVER, Dawid J.: Noise Exposure of Truck Drivers: A Comparative Study, 564
VANDERWERF, R.: Apparent Versus Real Exposures of Nuclear Medicine Technologists During Aerosol Lung Ventilation Scanning, 202
VASS, Arpad A.: Quantitation of Free-Living Amoebae and Bacterial Populations in Eyewash Stations Relative to Flushing Frequency, 626
VEHVILÄINEN, Anu: Exposure to Airborne Microbes During the Repair of Moldy Buildings, 279
VERB, Robert H.: A Comparison of Conventional and High Volume-Low Pressure Spray-Painting Guns, 304
VICK, David O.: Occupant Generated Carbon Dioxide as a Measure of Dilution Ventilation Efficiency, 756
VIET, Susan M.: Retrospective Beryllium Exposure Assessment at the Rocky Flats Environmental Technology Site, 804
VINCENT, J.H.: Exposures to Inhalable and 'Total' Oil Mist Aerosol by Metal Machining Shop Workers, 1149
VIRJI, Mohammed Abbas: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154
VON BRAUN, Margrit C.: The Effectiveness of the Freeze Fracture Carpet Grinding Technique in the Determination of Total Lead, 480

WALL, David K.: An Experimental Design Approach to Retrospective Exposure Assessment, 251
WALLACE, Marjorie E.: A Comparison of Conventional and High Volume-Low Pressure Spray-Painting Guns, 304
WALTERS, Michael D.: Worker Exposure to Endotoxin, Phenolic Compounds, and Formaldehyde in a Fiberglass Insulation Manufacturing Plant, 889
WEILANDICS, C.: Potential Health Hazards from Lead Shielding, 1124
WELINDER, Hans E.: Direct Measurement of Hexahydrophthalic Anhydride in Workplace Air with a Transportable Fourier Transform Infrared Spectrometer, 832
WERLEY, Michael S.: Development of Pituitary Lesions in ND4 Swiss Webster Mice When Estimating the Sensory Irritancy of Airborne Chemicals Using ASTM Method E981-84, 712
WILLEKE, Klaus: Penetration of Airborne Microorganisms Through a Surgical Mask and a Dust/Mist Respirator, 348
WILLEMS, Bernardus: Effect of Operator Seat Design on Vibration Exposure, 837
WILLIAMS, Phillip L.: Comparison of Respirable Samplers to Direct-Reading Real-Time Aerosol Monitors for Measuring Coal Dust, 1013
WILSEY, P.W.: Exposures to Inhalable and 'Total' Oil Mist Aerosol by Metal Machining Shop Workers, 1149
WONG, Ben: Comparison of Metalworking Fluid Mist Exposures from Machining with Different Levels of Machine Enclosure, 1173
WOSKIE, Susan R.: Exposure Assessment for a Field Investigation of the Acute Respiratory Effects of Machining Fluids. I. Summary of Findings, 1154
WÜNSCH, Gerold: Chromatographic Characterization of Adsorbents for Selective Sampling of Organic Air Pollutants, 128

XUE, Dixi: Performance of Laboratories Analyzing Organic Solvents in the Proficiency Analytical Testing Program, 295

YANG, Raymond S.H.: Variability in Biological Exposure Indices Using Physiologically Based Pharmacokinetic Modeling and Monte Carlo Simulation, 23
YONG-KUI, Ma: Adjusting the Evlauation Limit for Broad-Band Whole-Body Vibration, 476
YOON, Young Hee: Respirator Cartridge Service-Life: Exposure to Mixtures, 809
YU, Rong Chun: The Relationships Between Urinary Elimination, Airborne Concentration, and Radioactive Hand Contamination for Workers Exposed to Uranium, 615

ZAYED, Joseph: Exposure of Taxi Drivers and Office Workers to Total and Respirable Manganese in an Urban Environment, 376
ZELLERS, Edward T.: Investigation of Organic Vapor Losses to Condensed Water Vapor in Tedlar® Bags Used for Exhaled-Breath Sampling, 257
ZELLERS, Edward T.: Prototype Instrument Employing a Microsensor Array for the Analysis of Organic Vapors in Exhaled Breath, 1103
ZHUANG, Z.: Field Performance Measurements of Half-Facepiece Respirators—Foundry Operations, 166
ZHUANG, Ziqing: Field Performance Measurements of Half Facepiece Respirators—Paint Spraying Operations, 50
ZOCK, Jan-Paul: The Influence of Different Filter Elution Methods on the Measurement of Airborne Potato Antigens, 56

# 1996 SUBJECT INDEX

The terms in this index are alphabetized on a letter-by-letter basis; word spacing, hyphen, comma, and prime in a term are ignored in the sequencing. Also ignored in the sorting are initial numbers and Greek letters. Locators followed by the designation (LTE) indicate a letter to the editor.


**A**

AAIH. *See* American Academy of Industrial Hygiene
ABIH. *See* American Board of Industrial Hygiene
abrasive blasting
  lead detection and, 161–165
abrasive manufacturing
  respirable mineral exposure, 753–755
*Acanthamoeba*, 626–633
*Accident Prevention and OSHA Compliance* (Michaud), 658–659
accident rates
  biotechnology industry, 385
accredited laboratories, 401–412, 861–876
accuracy analysis
  NIOSH exposure standards and accuracy criterion, 440, 452–455
  statistical methods for, 440–451
acetone
  exhaled-breath sampling, 257–263
  respirator service life, 809–819
ACGIH. *See* American Conference of Governmental Industrial Hygienists
Acoustical Society of America, 661
acquired immune deficiency syndrome. *See* AIDS
actinomycetes
  construction worker exposure to, 279–284
active hearing-protection devices, 176–185. *See also* hearing loss; hearing protection
active noise-reduction technology, 177–179
active sampling. *See* sampling methods
administrative procedures
  performance-based exposure control limits and, 33–42
  small businesses often lack, 44
adsorbents
  for sampling organic air pollutants, 128–133
  multicomponent mixtures, 809–819
adsorption enthalpy
  influence on sampling of organic air pollutants, 128–133
*Aerobacter*. *See* its later name *Enterobacteria*
aerobic metabolism
  hydrogen sulfide exposure, 464–468
*Aerococcus viridans*
  exposure to from metalworking fluids, 1161
aerodynamic size spectrometer
  effectiveness of, 348–355
aerosol capture
  influence of source parameters, 134–141
aerosol dispersion
  influence of source parameters, 134–141
aerosol exposures. *See* exposure assessment; specific substance
aerosol(s)
  influence of source parameters on dispersion and capture, 134–141
aerosol sampling. *See also* dust monitors, direct reading
  evaporation of metalworking fluids during, 1137–1141
  fiber measurement, 820–824
  inspirable fraction criterion, 537
Agenda 21, 992
age-of-air analysis techniques
  exposure intensity, 542, 543
  in ventilation studies, 546, 1055
aggregates
  measuring particle size, 1024–1034
Agreement on Technical Barriers to Trade (TBT), 939
agricultural harvesting, ergonomics of, 946–948
agricultural workers. *See also* specific animal; specific crop; specific industry
  developing countries, 985
  mold exposure, 485
AIDS (acquired immune deficiency syndrome)
  in Central Asia, 1101
AIHA. *See* American Industrial Hygiene Association
airborne contaminants. *See also* specific substance
  adsorbents for sampling organic, 128–133
  estimating sensory irritancy, 712–716
  sampling and measuring, 567–570
  work practices and exposure to, 469–475
airborne metals
  exposure to, 196–201
airborne microbes
  beekeeper exposure to, 484–490
  construction worker exposure to, 279–284
  respirator penetration by, 348–355
  sugar mill worker exposure to, 1002–1012
  survey of a building reported, 1068–1071
airborne particulates. *See also* particulate exposure
  in animal facilities, 634–635
  spot test kits for lead, 161–165
airborne vapor concentrations
  effect of evaporation in measuring, for metalworking fluids, 1137–1141
  effect of evaporation in predicting, for metalworking fluids, 1128–1136
  predicting, 527–528
air boundary layer
  effect on sampling, 551–556
  influence on exposure to airborne contaminants, 470
air changes per minute
  carbon dioxide decay as a measurement of, 756–759
air conditioning
  fungal contamination, 996–1001
air filters
  efficiency, 996–1001
airflow
  determining inside a closed bunker, 1072–1073
  estimating evaporation rates in a moving, 519–525
  prediction modeling, 356–364
  visualizing with schlieren imaging technique, 263
air mixing
  determining, 602
  exposure intensity estimates and, 542–550
  theoretical models, 1055
air pollutants. *See* airborne contaminants
air purifying respirators
  assigned protection factor, 736
air sampling
  adsorbents for organic compounds compared, 128–133
  evaporation of metalworking fluids during, 1137–1141
  filter elution methods and materials compared, 567–570
  for HDI polyisocyanates, 153–160
  for vapors from chemical weapons, 1072–1073
  for 1,6-hexamethylene diisocyanate, 153–160
  inside air-conditioning systems, 996–1001
  light hydrocarbons, 245–250
  sampler validation, 1115–1123
Alar, 797
alkanolamides
  exposure limit predictions, 239–244
allergens
  dust mite, 573–574 (LTE)
  mouse, 634–640
*Alternaria*, 999
alumina, 370
aluminum
  chemical hazards of smelting, 370
  contamination of water in Central Asia, 1100
  exposure to in abrasive manufacturing, 753–755
American Academy of Industrial Hygiene (AAIH)
  unification proposals, 709
American Association of Occupational Health Nurses
  OSHA reform, 775–777
American Automobile Manufacturers Associations (AAMA)
  metalworking fluid symposium, 1127
American Board of Industrial Hygiene (ABIH)
  unification proposals, 709
American College of Occupational and Environmental Medicine
  OSHA reform, 775–777
American Conference of Governmental Industrial Hygienists (ACGIH)
  biological exposure indices (1994-1995), exhaled air, 258
  encapsulating protective clothing, 58–61
  exposure limits
    diisocyanate monomers, 905
    polyisocyanates, not set for, 906
    vapor phase hydrogen peroxide, 844
  inhalable aerosol size fraction, 820–821, 1149
  manganese exposure levels, 379
  nitrosdimethylamine (NDMA) exposure, 919
  noise criteria, 924–928
  phenol concentrations in urine, 29
  reference standards for chemical substances in biological media, 23, 30
  refined oils, 1137, 1150
  thoracic fraction, definition, 824
  threshold limit values (TLV®s). *See* threshold limit values (TLV®s)
  unification proposals, 709
American Industrial Hygiene Association (AIHA)
  accredited laboratories, 401–412, 861–876
  author guidelines, 491–493, 771–773
  best practices guidelines, 597
  government affairs efforts, 421
  hearing loss position statement, 661–662
  infrastructure, 421
  mission statement revised, 5
  occupational health and safety management systems, 597
  OSHA reform, 421
    third-party certification, 325, 775–777, 859–860 (LTE)
  process safety management white paper, 767–768
  risk assessment in industrial hygiene, 423
  Standard of Good Practice, 421
  standards, role in development of, 229
  strategic plan, 517, 887
  unification proposals, 709
American National Standards Institute (ANSI)
  occupational health and safety, 930, 938
  respirators
    assigned protection factor, 735–740
    classifications, 736–739
  role in ISO registration, 389
American Petroleum Institute
  process safety management, 767
American Society for Testing and Materials (ASTM)
  wipe sampling specification, 1036
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
  indoor air guidelines, 1054, 1060
American Society of Safety Engineers (ASSE)
  OSHA reform, 775–777, 859–860 (LTE)
American Speech-Language-Hearing Association, 661
ammonia
  in animal facilities, 634–640
amoebae, free-living
  in eyewash stations, 626–633
amosite fibers, density, 823
α-amylase, 356
anaerobic metabolism
  hydrogen sulfide exposure, 464–468
analog active noise-reduction devices, 177–178

analytical recovery and testing. *See also* accuracy analysis; specific substance; testing proficiency
methods discussed for diffusive samplers, 1116
Anderson, Betty, 792
animal facilities
indoor air quality, 634–640
animal studies
airborne chemicals tested, 712–716
metalworking fluids, 1168–1172
risk estimation in, 705
ANSI. *See* American National Standards Institute
ANSI Z88.2, 735–740
1-(9-anthracenylmethyl)piperazine
as a reagent for isocyanates, 905–913
compared to 1-(2-methoxyphenyl)piperazine, 914–917
antiarrhythmics
exposure control limits, 34
antigens, airborne
sampling and measuring, 567–570
antineoplastic agents
exposure control limits, 34
Aral Sea
reduction of, 1096, 1097, 1101
aromatic hydrocarbons. *See* specific substance
Arthur D. Little, Inc., 931
asbestos fibers. *See also* specific type
exposure, measuring, 820, 823
exposure, sampling accuracy of fiber cassettes, 142–152
making replicate filter samples, 741–745
asbestos management
evaluation of, 1065–1068
Ashgabat, NAS Young Investigator Program at, 1097
*Aspergillus*
air-conditioning systems and, 996–1001
beekeeper exposure to, 484–490
aspiration efficiency
fiber sampling cassette, 142–152
ASSE. *See* American Society of Safety Engineers
assembly line tasks
analyzing jobs for ergonomic risks, 950–953
assessment instrument(s)
for an ISO 9001/14001 standard, 929–935
needed for measuring inhalable fraction, 1150
assigned protection factor (APF)
respirators, 735–740
asthma, occupational chemical, 153
ASTM E981-84 Method, 712–716
atherosclerosis, coronary. *See* coronary atherosclerosis
atmosphere-supplying respirators
assigned protection factor, 738
atrazine, in drinking water, 792
auditing
ISO standard compliance, 930–931
occupational health and safety standards, 929–935
auditory warning systems
hearing protection devices and, 176
autobody repair shops, 153–160
automobile painters. *See also* paint spraying operations
monitoring methods evaluated, 153–160

## B

Babinda Mill, 1003, 1005, 1006, 1008, 1009
*Bacillus*
exposure to from metalworking fluids, 1154, 1159, 1161
back belts
OSHA and, 955, 956
back injury. *See also* low-back pain
lifting capacity and, 456
bacteria. *See also* indoor air quality; specific species
colonization in metalworking fluids, 1164, 1168–1169
construction worker exposure to, 279–284
eyewash stations, 626–633
released through carbon dioxide laser use, 348
respirator protection against, 279–284
treatment of sessile, 631
bagasse, description and use, 1002, 1003
bagassosis, 1002–1012
bakeries
dust control ventilation, 356–364
Baldwin, David G. (book reviewed), 393
Ballenger, Cass (R-NC), 325, 859 (LTE)
barrier isolator systems
advantages of, 844
***Basic Guide to Accident Investigation and Loss Control*** (Vincoli), 77
***Basic Guide to Industrial Hygiene*** (Vincoli), 206
*Beauvaria*
air-conditioning systems and, 996–1001
beekeeping
mold exposure from, 484–490
BEIs. *See* biological exposure indices (BEIs)
benzene
biological exposure indice for exhaled air, 258
exposure during *in situ* burning, 62–67
retrospective exposure assessment, 333–343
variability in exposure indices, 23–32
benzo[a]pyrene
from environmental tobacco smoke and cardiovascular disease, 285–294
Berry, Clyde M., 327–329
beryllosis, chronic, 804–805
beryllium
retrospective exposure assessment, 804–808
toxicity of, 804
between-worker exposure variation.
*See also* human variability
assessment strategies, 724–734
cobalt, 365–369
fiberglass insulation manufacturing, 889–896
heat response, 651
impact of work practices on, 469–475
bias in accuracy analysis, 440–455
bias in an audit or field survey, 932
bioaerosol contamination.
*See* airborne contaminants; airborne microbes
bioaerosol, defined, 1068
biocidal treatment of water
effectiveness, 631
bio-decontamination. *See* sterilization
biofilm
described, 631
eyewash stations, 626, 631
biological exposure indices (BEIs)
exhaled air, 258
physiologically based pharmacokinetic modeling, 23–32
variability in protection provided by, 23–32
***Biomarkers and Occupational Health*** (Mendelsohn, Peeters, Normandy), 571–572
biomechanical analysis, 949
biotechnology industry
health and safety resource allocation, 381–386
Bisesi, Michael S. (book reviewed), 761
bloodborne pathogens
exposure monitoring, 1048–1049
body substance exposure, data review, 1048–1049
boiling point
effect on respirator filter breakthrough time, 717–723
book reviews. *See* specific author; specific title
booth-type hood
exposure control, 469–475
boundary layer. *See* air boundary layer
brain cancer
occupations associated with risk for, 251
brazing
exposure to airborne metals during, 196–201
breath sampling
common methods and problems with, 1103
for volatile solvent exposure, 257–263
permeation of water vapor, 260–261
prototype instrument for measuring organic vapors in, 1103–1108
British Environmental Standard 7750, 931
British Standards Institute, 938, 941
broad-band vibration
adjusting the evaluation limit for, 476–479
bromine
exposure to in abrasive manufacturing, 753–755
Browner, Carol, 792
building repair. *See* construction and renovation
Bunker Hill Superfund Site (Kellogg, Idaho), 481
1,3-butadiene, 795–796
2-butanone
exhaled-breath sampling, 257–263
byssinosis
in Turkmenistan, 1099

## C

CAD. *See* computer-aided design (CAD)
cadmium exposure, 1019–1023
cage changing
contaminant generation during, 634–640
calcium
exposure to in abrasive manufacturing, 753–755
***Calculation Methods for Industrial Hygiene*** (Dinardi), 393
calibration
importance of, 576 (LTE), 848
in industrial atmospheres, 835
magnetic fields, 860 (LTE)
Canada
hazardous materials data sheets (LTE), 87
cancer. *See* International Agency for Research on Cancer; specific type
candle filters
efficiency in removing metalworking fluid mist, 1142–1148
Caplan, Knowlton J., 231–237
carbon dioxide
as a tracer gas for measuring, 1054–1058
indoor air guidelines, 1060
indoor air quality measurement, 756–759
survey of a building reported, 1068–1071
carbon dioxide laser
bacteria released through the use of, 348
carbon disulfide
as a solvent for desorption, 1116
from environmental tobacco smoke, 285–294
carbon monoxide
aluminum smelting, 370
biological exposure indice for exhaled air, 258
exposure standards, 621
from environmental tobacco smoke, 285–294
produced by weapons fire, 621
carbon tetrachloride
variability in exposure indices, 23–32
carboxyhemoglobin
predicting, 621–625
cardiopathy(ies)
environmental tobacco smoke and, 291–292
cardiovascular disease
occupational exposure to environmental tobacco smoke, 285–294, 1076–1077 (LTE)
carpal tunnel syndrome, 849, 1109
carpets
sampling for lead, 480–483
cartridge filters
efficiency in removing metalworking fluid mist, 1142–1148
CEC-BCR. *See* Commission of the European Communities Bureau of Community Reference (CEC-BCR)
CEN. *See* Comité Européen de Normalisation
Centers for Disease Control and Prevention (CDC)
blood lead level guidelines, 611
respirators, draft guidelines for, 349
tuberculosis control guidelines and air mixing, 542
tuberculosis transmission prevention, 583 (LTE)

Central Asia. *See also* specific country
  environmental and occupational health conditions in the republics of the former Soviet Union, 1096–1102
  history, geography, climate, population of, 1096–1097
central nervous system
  manganese exposure and, 376–377
centrifugal cells
  efficiency in removing metalworking fluid mist, 1142–1148
certification programs. *See* credentialing programs
charcoal adsorption
  methylene chloride and, 45
  multicomponent mixtures, 809–819
chelation therapy, 611
Chemical Manufacturers Association
  process safety management, 767
chemical mixtures. *See* mixture(s)
chemical protective clothing. *See* protective clothing
chemical screening
  Environmental Protection Agency, 801
chemicals, industrial. *See* industrial chemicals
chemical weapons, 1072–1073
Chen, Steve Y.S. (book reviewed), 857
chlorine
  exposure to from metalworking fluids, 1154–1162
  resistance of free-living amoebae to, 632
  workplace protection factor study, 50
chloroform
  variability in exposure indices, 23–32
chromium
  exposure to in abrasive manufacturing, 753–755
  workplace protection factor study, 50, 969–972 (LTE)
chrysotile fibers, density, 823
*Cladosporium*
  air-conditioning systems and, 996–1001
CNS. *See* central nervous system
coal dust
  monitors for, compared, 1013–1018
coal tar pitch volatiles, 370
cobalt exposure
  during wet-tip grinding, 196–201
  in the hard metal industry, 365–369
collectors
  tested for efficiency in removing metalworking fluid mist, 1142–1148
Comité Européen de Normalisation (CEN)
  aerosol exposure assessment criteria, 1149
  diffusive sampler validation protocol, 1116
Commission of the European Communities Bureau of Community Reference (CEC-BCR)
  laboratory intercomparison project, 1121
communication
  of reproductive health risk, 641
  of risk information, 186–190, 990
***Complete Guide to the Hazardous Waste Regulations, 2nd ed.*** (Wagne), 206–207
***Comprehensive Guide to Work Injury Management*** (Isernhagen), 856–857
computational fluid dynamics
  modeling exposure using, 469–475
  ventilation modeling with, 356–364
computer-aided design (CAD)
  confined-space management, 1050–1051
  using for ergonomic workplace design, 961–963
confined space
  computer-based management, 1050–1051
construction and renovation
  exposure to airborne microbes during, 279–284
construction workers
  exposure to airborne microbes, 279–284
  OSHA Cadmium Standards for, 1019
  OSHA draft standards for prevention of musculoskeletal disorders, 953–955
Consumer Product Safety Commission
  lead paint ban, 610
containment technologies
  performance-based exposure control limits and, 34
contaminant concentration
  modeling task contribution to, 599–609
  ventilation efficiency, 1055
contaminant dispersion
  influence of aerosol source parameters, 134–141
continuous improvement
  ergonomics and, 959
  standard setting and, 932
continuous manufacturing
  within-worker exposure variability, 895
"Contract with America," 798
coolants, metalworking. *See* metalworking fluids
Corburn-Forster-Kane equation
  described, 622
  errors in derivations of, 621–625
coronary atherosclerosis
  environmental tobacco smoke and, 289–291
coronary heart disease
  environmental tobacco smoke and, 285–294, 1076–1077 (LTE)
corrections published
  exposures to power-frequency electric and magnetic fields, 580–583 (LTE)
cost-benefit analysis
  science and policy aspects of
    Finkel, Adam M., 793–798
    Gillen, Matt, 800
    Kenkeremath, Nandan, 791–793
cotinine exposure
  environmental tobacco smoke and, 746–752
Council for Accreditation in Occupational Hearing Conservation, 661
Council for Tobacco Research, 1076–1077 (LTE)
Cowan, James P. (book reviewed), 495
credentialing programs
  Goelzer, Berenice Isabel Ferrari on, 989–991
  OSHA reform and AIHA views on, 775–777
crocidolite fibers, density, 823
Cummings Memorial Award Lecture, 231–237
cumulative force
  calculating in typing, 1112–1113
cumulative trauma disorders
  evaluation method for factors affecting, 950–953
  risk factors, 849–854, 951
cutting fluids. *See* metalworking fluids
cyclohexane
  respirator service life, 809–819
Czechoslovakia, industrial hygiene in, 123–125
Czech Republic, industrial hygiene in, 125–127, 1096

## D

Dashauz, NAS Young Investigator Program at, 1097
data entry work. *See* typing
deep-body temperature
  personal heat stress monitor for, 650–657
demolition work. *See* construction and renovation
Demster, Stanley J. (book reviewed), 857
dental operatory
  controlling nitrous oxide in, 272–278
deoxyribonucleic acid. *See* DNA
Department of Defense (DOD)
  lead-based paint policy and control, 611
Department of Energy
  Rocky Flats Plant, 804–808
deQuervain's disease, 1109
developing countries
  occupational hygiene needs in, 984–995
diesel exhaust, 1033
diffusive sampler(s)
  accuracy under field conditions, 551–556
  bilevel validation theory in validation protocols, 1116
  effect of geometric changes, 897–904
  European evaluation protocol, 1115–1123
  NIOSH evaluation protocol, 1115–1123
  radial compared to axial, 904
digital active noise-reduction devices, 178–179
diisocyanate monomers, exposure standards for, 905
diisocyanates. *See also* isocyanates; polyisocyanates
  4,4′-diphenylmethane, 906
  1,6-hexamethylene diisocyanate (HDI)
    monitoring methods evaluated, 153–160
    Oregon exposure standard, 906
  2,4-toluene, 907
Dinardi, Salvatore R. (book reviewed), 393
dinitrosopentamethylene tetramine, 922
dioctyl phthalate (DOP) filters
  efficiency in removing metalworking fluid mist, 1142–1148
4,4′-diphenylmethane diisocyanate, 906
direct reading dust monitors.
  *See* dust monitors, direct reading
displacement
  respirator filter adsorption and mixtures, 809–819
DNA (deoxyribonucleic acid)
  nitrosamines and, 918, 923
  recombinant. *See* recombinant DNA
dose surrogates
  refinement of recommended, 285–294
dosimetry, 202–204
drinking water standards
  atrazine, 792
dust control
  ventilation for, 356–364
dust exposure
  abrasive manufacturing, 753–755
  coal mines, 191–195
  sampling and measuring, 567–570
  workplace protection factor studies, 166–174, 972–973 (LTE)
dust mite allergen, 573–574 (LTE)
dust monitors, direct reading
  compared with real-time aerosol monitors, 1013–1018
  tested, 557–563

## E

Eastern Europe. *See also* specific country
  industrial hygiene, 1096
elastic deformation
  human tissue, 849
electrolysis
  hydrogen cyanide gas emission, 1044–1046
electromyography (EMG) studies
  lifting capacity predictions and, 456–463
  typing, 849–854
electrostatic precipitation and effects
  sampling accuracy for metalworking fluids, 1137–1141
  sampling accuracy of fiber cassettes, 142–152
ELPAT Program. *See* Environmental Lead Proficiency Analytical Testing (ELPAT) Program
embalming
  formaldehyde exposure, 251–256
  work tasks and contaminant concentration, 599
emission data
  reconstructing from concentration data, 599–609
employment, world wide, 929
encapsulating protective clothing
  wet bulb globe temperature adjustment for, 58–61
endotoxin
  exposure during fiberglass insulation manufacturing, 889–896
  exposure to from metalworking fluids, 1155, 1159, 1161, 1168–1172
    animal studies, 1163–1167
engineering controls
  for ergonomic hazards, 956
  metalworking fluid mist, 1173–1178
  performance-based exposure control limits, 33–42

retrofit compared to original equipment, 1177
*Enterobacter*
exposure to from metalworking fluids, 1159, 1161
*Enterobacteria*
exposure to from metalworking fluids, 1161
Environmental Lead Proficiency Analytical Testing (ELPAT) Program
analytical methods used, 1037–1040
explanation, 208–215, 497–505
laboratory performance, 1035–1037
status report, 208–215, 497–505, 697–703
environmental management systems
ISO 14001. *See* ISO 14001
environmental practices, corporate
international standards developing, 929
environmental protection
international action on, 992
trade agreements and, 939
Environmental Protection Agency (EPA)
asbestos management, 1065
carboxyhemoglobin prediction, 623
chemical screening, 801
drinking water standards, 792
health and safety inspections, 387–391, 859–860 (LTE)
indoor air quality, 1059
inhalation exposure, estimating for new chemical substances, 526–536
mass balance model evaluated, 526–536
noise reduction rating, 264–271
proposed Risk Management standard, 767
risk assessment practices, 791–792, 795, 798, 799
environmental tobacco smoke. *See* tobacco smoke, environmental
epicondylitis, 849
epidemiology studies
fiberglass insulation manufacturing, 889–890
homogeneous exposure group technique, 895
metalworking fluid aerosols, 1154–1162
retrospective exposure assessment
benzene, 333–343
formaldehyde, 251–256
total hydrocarbons, 333–343
sugar mill workers, 1002–1012
epoxy resins
contaminating constituents of, 832
Ergoman, 961–963
ergonomics. *See also* specific activity; specific disorder
agricultural harvesting, 946–948
assessment method for work demands, 948–950
construction work, 953–955
in developing countries, 986
industrial hygiene approach to, 955–957
in short-cycle tasks, 948–950
meeting proceedings, 761
North Carolina initiatives, 957–959
OSHA draft standard, 953–955
quantification of physical work load, 963–965
seat design, 837–842
*Ergonomics, Work and Health* (Pheasant), 967–968
ergot alkaloids
exposure control limits, 34
estrogens
exposure control limits, 34
ethics
international standards for occupational hygiene programs, 389, 390
ethyl acetate
respirator service life, 809–819
ethyl benzene
biological exposure indice for exhaled air, 258
ethylene oxide, limitations of, 843
etiology
exposure measurements and, 6–15
European Union (EU)
environmental management system standards, 938
occupational health and safety standards, 929
evaporation
metalworking fluids, 1128–1141
rate for volatile liquids, 519–525
"Exaggerated Risk" (Lynch and Louis), 798
exceedance
statistical methods for testing, 6–15
expired air concentrations
suitability of as a biological index, 28
exposure assessment. *See also* specific substance
estimating evaporation rates for, 519
filter elution methods and measurement error, 567–570
for new chemical substances, 526–536
indoor air quality, in an imperfectly mixed room, 542–550
industrial hygiene risk assessment model, 431
metalworking fluids
effect of evaporation in sampling and measuring, 1128–1141
epidemiologic study, 1154–1162
measurement methods compared, 1149–1153
molds, no universal guidelines for, 485
respirable fibers, 821
respirable minerals, 753–755
retrospective.
*See* exposure assessment, retrospective role in risk assessment, 800–802.
*See also* risk assessment using a Fourier trans form infrared spectrometer, 832–836
exposure assessment, retrospective
benzene, 333–343
beryllium, 804–808
experimental design approach to, 251–256
quantitative exposure-estimating algorithm for, 333–343
total hydrocarbons, 333–343
exposure control. *See also* engineering controls; local exhaust capture
performance-based approach to setting limits for, 33–42
reproductive toxins, 641–649
spray-painting gun selection and, 309
exposure levels
assessment strategies, 6–15, 251–256, 724–734
no universal guidelines for molds, 485
sampling accuracy of fiber cassettes, 142–152
exposure standards
accuracy analysis, 440–451
exposure variable
uranium, surrogates for, 616, 619
exposure variation. *See also* between-worker exposure variation; within-worker exposure variation
accounting for workplace changes, 724–734
importance of evaluating, 368
extracellular polymeric substances
effect on biocides, 631
eyewash stations
amoebae and bacterial populations in, 626–633

## F

facility design
performance-based exposure control limit and, 37–41
falls
workplace safety and, 825–831
fatigue
analyzing, 949–950
typing, 849–854
federal regulations.
*See also* specific agency; specific issue
reproductive health hazards and, 641–642
risk assessment, science and policy aspects of, 791–802
ferro-silicon smelting
silica fume emissions, 1024–1034
fetal protection, 642
fiberglass insulation manufacturing
exposures in, 889–896
fiber measurement
application of the thoracic sampling definition, 820–824
harmonizing methodology, 994
fiber sampling cassette
aspiration efficiency, 142–152
fibrous particles
aluminum smelter workers and, 370–375
filter efficiency. *See also* specific type
loading differences between solids and liquids, 1143
filter elution, 567–570
Finkel, Adam M., 793, 798
fit testing, respirators, 576–580 (LTE)
flour additives
respiratory symptoms from, 356
flushing regimens
eyewash stations, 626–633
Fogarty International Foundation
work in countries of the former Soviet Union, 1096, 1102
foot traction
shoe wear and, 825–831
Ford Motor Co. Industrial Hygiene Laboratory, 1174
formaldehyde exposure
during fiberglass insulation manufacturing, 889–896
from metalworking fluid aerosols, 1163–1167
guidelines, 1060–1061
in animal facilities, 636, 638
retrospective assessment of, 251–256
work tasks and room concentration, 599–609
foundry(ies)
workplace protection factors provided by respirators, 166–174, 972–973 (LTE)
Fourier transform infrared spectrometer, 832–836
free trade, 937–940
freeze fracture technique
lead detection using, 480–483
fume exposures
workplace protection factor studies, 166–174, 972–973 (LTE)
fungi
air-conditioning systems and, 996–1001
beekeeper exposure to, 484–490
colonization in metalworking fluids, 1164
construction worker exposure to, 279–284
furniture stripping
chemical exposures during, 43–49, 575–576 (LTE)

## G

Gardiner, K. (book reviewed), 967
gas chromatography, inverse.
*See* inverse gas chromatography
gaseous diffusion
uranium contamination through, 615
gaseous fluoride, 370
gasoline vapor
sampling methods evaluated, 245–250
GATT. *See* General Agreement on Tariffs and Trade
GCA MINIRAM PDM-3 (dust monitor), 557–563
General Agreement on Tariffs and Trade (GATT)
conformity of standards, 388–390
goal of, 936
history, 938–939
occupational health and safety standards, 929, 936–944
Generic Exposure Assessment Standard (GEAS), 423, 429, 431, 425
Gillen, Matt, 799–802
glass fibers, density, 823
global economy
credentialing in, importance of, 929

health and safety standards as a trade barrier, 936–938
Goelzer, Berenice Isabel Ferrari, 984–995
gonadotropin-releasing hormone analogs
exposure control limits, 34
Gottlieb, Robert (book reviewed), 311–312
government procurement specifications
GATT and, 939–940
health and safety standards, 936–944
ISO 9000 standards, 938
Grant Thornton LLP, 931
Green, Georgia K. (book reviewed), 761
grinding fluids. *See* metalworking fluids
Grumbly, Thomas, 792

## H

half-facepiece respirators
assigned protection factor, 736–739
workplace protection factor study
for concrete patching compound, 395–396 (LTE)
in foundry operations, 166–174, 972–973 (LTE)
in paint spraying operations, 50–57, 969–972 (LTE)
***Handbook of Environmental Acoustics*** (Cowan), 495
***Handbook of Laboratory Health and Safety, 2nd. ed.*** (Stricoff and Walters), 311
hand contamination
uranium, 615–620
hard metal
exposure to airborne metals during manufacturing, 196–201
exposure variability, 365–369
Harrington, J.M. (book reviewed), 967
***Hartmannella*** amoebae, 626–633
Harvard Group of Risk Management Reform, 793
harvesting. *See* agricultural harvesting, ergonomics of
hazard data and assessment
availability of, 801
hazard identification and prioritization, 427, 429
hazardous chemicals
process safety management standards, 767–768
hazardous materials data sheets
Canada (LTE), 87
hazardous waste
regulations, guidebook on, 206–207
transboundary movement of, 991
hazard ratio, defined, 735
HDI polyisocyanates
monitoring methods evaluated, 153–160
Oregon exposure standard, 906
reagents for tested, 914–917
Health and Safety Executive (HSE)
air sampling methods for HDI polyisocyanates, 154
diffusive sampler evaluation protocol, 1116
isocyanate identification, 906
health and safety inspections
OSHA reform exempting routine, 775–777
health and safety resource allocation
biotechnology industry, 381–386
health care workers
monitoring blood borne pathogen exposure, 1048–1049
hearing conservation. *See* hearing protection
hearing loss
criterion for recording occupational, 661–662
hearing protection. *See also* active hearing-protection devices; active noise-reduction technology
muff-type protectors evaluated, 264–271
OSHA, ACGIH criteria compared, 924–928
proposed for truck drivers, 566
technology advancements in, 175–185
heart disease. *See also* coronary heart disease; ischemic heart disease occupational, 286
heat stress
encapsulating protective clothing and, 58–61
indicators, 344–347
monitoring recommendations, 650, 651
monitor testing, 650–657
problems with self-monitoring, 651
heavy metals
contamination by in Central Asian republics, 1096, 1099, 1100
Henry's law
breath sampling and, 257–263
HEPA filters. *See* high-efficiency particulate air (HEPA) filters
hepatitis D
in Central Asia, 1101
hexahydrophthalic anhydride
direct measurement of, 832–836
1,6-hexamethylene diisocyanate (HDI)
monitoring methods evaluated, 153–160
Oregon exposure standard, 906
*n*-hexane
biological exposure indice for exhaled air, 258
high-efficiency particulate air (HEPA) filters
efficiency in removing metalworking fluid mist, 1142–1148
Hitchcock, R. Timothy, 207
homogeneous exposure groups
technique of, examined, 895
honeybee facilities
exposure to mold at, 484–490
House Commerce Committee, 792–793
Howard, Philip, 795
H.R. 1022 ***(Risk Assessment and Cost-Benefit Act of 1995)***, 791–793, 800, 801
hs-3800 Personal Heat Stress Monitor, 650–657
human body model(s)
three-dimensional, 961–963
***Human Factors Perspectives on Human-Computer Interaction: Selections from Proceedings of Human Factors and Ergonomics Society Annual Meetings 1983-1994*** (Perlman, Green and Wogalter), 761
human variability. *See also* between-worker exposure variation; within-worker exposure variation
biological indicators and, 23–32
biological monitoring and, 23–32
heat response, 656
risk assessment policy, 796
"humidifier fever," 889
humidifiers
fungal contamination and air-conditioning systems, 996–1001
humidity, relative. *See* relative humidity
Hungry Step
NAS Young Investigator Program, 1097
hydrocarbons
exposure during *in situ* burning, 62–67
polycyclic aromatic, 370
retrospective exposure assessment, 333–343
samplers for $C_1$ to $C_4$ evaluated, 245–250
hydrocarbons, petroleum. *See* petroleum hydrocarbons
hydrocarbons, volatile. *See* volatile hydrocarbons
hydrogen cyanide gas, 1044–1046
hydrogen peroxide, vapor phase. *See* vapor phase hydrogen peroxide
hydrogen sulfide
effects of inhaling, 464–468
hypersensitivity pneumonitis, 485

## I

IARC. *See* International Agency for Research on Cancer (IARC)
impermeable clothing. *See* protective clothing
indoor air quality
baseline indicators, 1058–1062
environmental tobacco smoke and, 285–294, 746–752, 1076–1077 (LTE)
estimating exposure intensity, 542–550
fungi and, 485
in animal facilities, 634–640
screening methods, 756–759
standards
carbon dioxide, 1060
temperature and relative humidity, 1060
ventilation, 1054
survey of a building reported, 1068–1071
industrial chemicals
cardiovascular toxicity profile of, 288–292
industrial hygiene
compared to risk assessment, 423, 431
ergonomics and, 955–957
international collaboration needed, 992–993
need for, in developing countries, 984–995
training for, 993
industrial hygiene certification. *See also* credentialing programs
biotechnology industry, 383
***Industrial Hygiene Evaluation Methods*** (Bisesi and Kohn), 761
industrialization, hazards associated with, 991
industrial solvents. *See also* specific solvent
exposure indices and interindividual variability, 23–32
infant mortality
in Central Asian republics, 1096, 1097, 1102
infrared spectroscopy
compared to Fourier transform infrared spectroscopy, 832–833
inhalable aerosol, defined, 1150
inhalation exposure. *See also* exposure assessment; specific substance
as part of true risks, 802
estimating potential for, 526–536
metalworking fluid contaminants and animals, 1168–1172
particle size and, 1033, 1149
Institute of Noise Control Engineering, 661
Institute of Occupational Medicine (IOM)
inhalable aerosol sampler tested, 1149–1153
interdigital transducers
described, 1104
interindividual variability. *See* human variability
International Agency for Research on Cancer
mineral oils as carcinogens, 1128
International Agency for Research on Cancer (IARC)
beryllium toxicity, 804
nitrosamines, 918–919
International Labour Organization (ILO), 985
occupational health and safety standards, 929
International Loss Control Institute's International Safety Rating System, 933
International Occupational Hygiene Association (IOHA), 991, 993
International Organization for Standardization (ISO). *See also* specific standard
aerosol exposure assessment, 1149
described, 938
document 2631/1, 476
environmental management standards, 929–930
inhalable aerosol size fraction, 820–821
membership, 938
occupational health standard, 387–391, 936–944
particle size-selective sampling criteria, 1149
registration process explained, 930
whole-body vibration exposure limits, 476
***Introduction to Industrial Hygiene*** (Scott), 571
inverse gas chromatography
adsorptive sampling methods and, 128–133
***Investigative Approach to Industrial Hygiene: Sleuth at Work*** (Levin), 1181–1182
iron
exposure to from metalworking fluids, 1154–1162
exposure to in abrasive manufacturing, 753–755
ischemic heart disease, 288–289
Isernhagen, Susan J. (book reviewed), 856–857
ISO. *See* International Organization for Standardization
ISO 1999 (noise), 925
ISO 9000 (manufacturing systems quality)

governments requiring, 941
history of, 938
number of certifications, 929
occupational safety and health standard compatibility, 387–391
ISO 9001 (quality assurance)
conformity with ISO 14001, 929–935
environment, safety and health management standard compability, 388
ISO 14000 (environmental management systems)
government procurement specifications and conformance with trade agreements, 387–391
history of, 938
major groups, 930
trade agreements, 939
ISO 14001 (environmental management standards)
conformity with ISO 9001, 929–935
isocyanate monomers, toxicity of, 153
isocyanates. *See also* diisocyanates; polyisocyanates
derivatization reagents for, 905–913
sampling in paint spraying operations, 914–917
isoinertial strength tests
as a predictor of lifting capacity, 456–463

J

Jackson Laboratory, The (Bar Harbor, Me.), 634–640
Johnston, J. Bennett, Sen. (D-La.), 798

K

Karakalpakistan, infant mortality in, 1097
Kazakhstan, 1097
Kenkeremath, Nandan, 791–793
keyboard(s)
key stiffness and fatigue, 849–854
kidney
cadmium exposure and monitoring, 1019
uranium contamination, 615
*Klebsiella*
exposure to from metalworking fluids, 1161
Kohn, James P. (book reviewed), 761
KPMG, 931
Kyrgyzstan, 1097

L

laser, carbon dioxide
bacteria released through the use of, 348
lead
contamination from in the workplace, 1124–1126
exposure to in abrasive manufacturing, 753–755
OSHA's revised exposure standards, 1124
subclinical effects of, 610–611
workplace protection factors provided by respirators, 166–174
lead shielding
contamination from, 1124–1126
lead testing
analytical proficiency in, 208–215, 497–505, 1035–1043
carpeting, 480–483
elevated blood lead levels, prevalence estimations, 610–614
spot test kits, 161–165
*Legionella*, 626, 1059
Legionnaires' disease, 626
leukemia
occupations associated with risk for, 251
Levin, Lester (book reviewed), 1181
life expectancy
in Central Asian republics, 1096, 1097, 1102
lifting. *See also* ergonomics
capacity, methods of predicting, 456–463
in short-cycle tasks, 948–950
strength, defined, 158
light hydrocarbons
sampling methods evaluated, 245–250
light-scattering principle, explained, 1017
linear extrapolation model(s)
EPA use of, 792
local exhaust capture.
*See also* engineering controls; exposure control
during wet-tip grinding
exposure to airborne metals, 196–201
influence of aerosol source parameters, 134–141
modeling with computational fluid dynamics, 356–364
nitrous oxide, 272–278
powder handling, 356–364
local supply air
used in combination with local exhaust, 356–364
Louis, Steve, 796, 798
low-back pain. *See also* back injury
link to occupation, 837
low-frequency noise. *See* hearing protection
lung cancer
aluminum smelter workers and, 370–375
cadmium exposure, 1019
lung inflammation
metalworking fluids and, 1168–1172
lung scanning
radiation protection, 202–204
Lynch, Jeremiah "Jerry"
Cummings Memorial Award, 231
"Exaggerated Risk," 796
risk assessment (reform legislation), 798–799

M

Macenski, Allen G., 859–860 (LTE)
machining
exposure to metalworking fluid contaminants from, 1128
assessment studies, 1149–1153, 1163–1167
mist exposure control during, 1173–1178
machining fluids. *See* metalworking fluids
Macknade Mill, 1003, 1005, 1006, 1008, 1009
magnesium
exposure to in abrasive manufacturing, 753–755
manganese
exposure measured, 376–380
exposure to in abrasive manufacturing, 753–755
manufacturing, continuous.
*See* continuous manufacturing
mass balance model
for new chemical substances, 526–536
material safety data sheets
reproductive health information and, 641
maternal mortality
in Central Asia, 1097
medical removal protection
cadmium exposed workers, 1019–1023
medical surveillance
OSHA requirements, 1019–1020
Mendelsohn, Mortimer L. (book reviewed), 571
Merck EM Quant rhodizonate spot-test kit, 161–165
mesothelioma
aluminum smelter workers and, 370–375
metal mesh filters
efficiency in removing metalworking fluid mist, 1142–1148
metal removal fluids. *See* metalworking fluids; specific substance
metalworking coolants. *See* metalworking fluids
metalworking fluids
American Automobile Manufacturers Association (Detroit, 1995) symposium proceedings, 1127–1178
composition and categorization of, 1155, 1163–1164
epidemiologic study of exposure to, 1154–1162
exposure-measurement methods compared, 1149–1153
health effects of exposure to, 1128, 1137, 1142, 1150, 1154, 1155, 1164
industrial collector efficiency, 1142–1148
neat distinguished from in-use, 1168
predicting exposure limits, 239–244
pulmonary effects in animals, 1168–1172
methanol
exhaled-breath sampling, 257–263
exposure during furniture stripping, 44, 47
methoxyflurane
detecting with surface-acoustic-wave (SAW) technology, 1103–1108
1-(2-methoxyphenyl)piperazine
compared to 1-(9-anthracenylmethyl)piperazine, 914–917
9-(methylaminomethyl)anthracene
as a reagent for isocyanates, 905–917
methyl chloroform
biological exposure indice for exhaled air, 258
variability in exposure indices, 23–32
methylcyclopentadienyl manganese tricarbonyl
exposure to in an urban environment, 376–380
methylene chloride
controlling exposures, furniture stripping, 43–49, 575–576 (LTE)
variability in exposure indices, 23–32
Metrosonics, Inc.
personal heat stress monitor tested, 650–657
Michaud, Patrick A. (book reviewed), 658
*Micrococcus*
*M. luteus*
exposure to from metalworking fluids, 1165
microorganisms. *See also* airborne microbes; specific organism
contamination in air-conditioning systems, 996–1001
eyewash stations and, 626–633
in metalworking fluids, 1155, 1164
in water-based metalworking fluids, 1161
MIE PDM-3 Miniram (dust monitor), 1013–1018
*Military Handbook: Human Factors Engineering Design for Army materiel (Metric)*, 622, 623
"mill fever," 889
Milloy, Steve, 792
Mine Safety and Health Administration (MSHA), 265
mining industry
hearing protection studies updated, 264–271
respiratory protection use, 191–195
mixed cellulose ester filters
metalworking fluid sampling with, 1137–1141
mixing factor, use of
contaminant concentration and, 542–550
controversial, 527–528, 530
mixture formula
exposure assessment using, 574–575 (LTE)
mixture(s). *See also* specific substance
breakthrough properties of multicomponent, 809–819
exposure indices and, 30
impact on respirator service life, 717–723, 809–819
metalworking fluids. *See* metalworking fluids
occupational heart disease and, 286
predicting exposure limits
metalworking fluids, 239–244
toxicologic evaluation of, 286
mold
air-conditioning systems and, 996–1001
beekeeper exposure to, 484–490
construction worker exposure to, 279–284
no universal exposure guidelines, 485
monitoring devices
dust samplers compared, 1013–1018
for heat stress tested, 650–657
for toluene diisocyanate reviewed, 68–71, 665–668 (LTE)
monitoring techniques
vapor phase hydrogen peroxide, 843–848
Monte Carlo simulation, 23–32
Mood, Lillian H. (book reviewed), 1181
mouse allergens, 634–640
Muinak, NAS Young Investigator Program in, 1097
multinational companies

investments in developing countries, 929
muscle disorders, chronic
typing, 849, 1109
muscle(s). *See* electromyography (EMG) studies; muscle disorders, chronic; skeletal muscle(s)
musculoskeletal disorders
cumulative force as a contributor to, 1109
OSHA draft standards, 953–955
musicians
environmental tobacco smoke, 746–752
*Mus m1* (mouse allergen), 634–640
*Mycobacterium*
*M. tuberculosis*
modeling infection risk for, 16–22
penetration of surgical masks and respirators by, 348–355

## N

NAFTA. *See* North American Free Trade Agreement
NAS. *See* National Academy of Sciences
NAS Young Investigator Program
water projects in Central Asia, 1096–1102
National Academy of Sciences (NAS)
risk assessment, opinion of, 796
risk assessment paradigm, 425, 426
work in the countries of the former Soviet Union, 1096
National Association of Counties, 793
National Environmental Policy Institute, 792
National Hearing Conservation Association, 661
National Institute for Occupational Safety and Health (NIOSH)
air sampling methods for HDI polyisocyanates, 154
Corburn-Forster-Kane derivation error, 621–625
diffusive sampler evaluation protocol, 1115–1123
exposure limits
diisocyanate monomers, 905
nitrous oxide, 272
polyisocyanates, not set for, 906
silica, 860 (LTE)
exposure standards and accuracy criterion, 440, 452–455
exposure to soluble uranium compounds, 615–616
fiber measurement, 820
Method 7400, 142, 151
methylene chloride, 43
nitrosdimethylamine exposure, 919, 922
occupational tuberculosis, 583 (LTE)
particulate filters, proposed rulemaking, 349
Standards Completion Program, pros and cons of, 1116
toxicity information. *See* Registry of Toxic Effects of Chemical Substances
National Institutes of Health (NIH)
DNA research guidelines, 382
National Lead Laboratory Accreditation Program (NLLAP), 1035–1043
National Society of Professional Engineers
OSHA reform, 775–777, 859 (LTE)
nerve disorders
typing, 849
Ness, Shirley A. (book reviewed), 658
neurological function
manganese exposure and, 376–377
neuromuscular depolarizing agents
exposure control limits, 34
new chemical substances
inhalation exposure, estimating, 526–536
Newfoundland Offshore Burn Experiment (NOBE), 62–67
Ni-Cad batteries. *See* nickel-cadmium batteries
nickel
exposure to in abrasive manufacturing, 753–755
nickel-cadmium batteries
cadmium exposure during manufacturing, 1020
nicotine
environmental tobacco smoke, 285–294, 746–752
nightclub musicians. *See* musicians
NIOSH. *See* National Institute for Occupational Safety and Health (NIOSH)
nitrosamines
carcinogenic effects, 918
exposures in rubber vehicle sealing, 918–923
occupational regulation, 919
nitrosdimethylamine
circumstantial link to cancer, 918–919
exposures in rubber vehicle sealing, 918–923
nitrosodibutylamine, 919
nitrosodiethylamine, 918, 921
nitrosodipropylamine, 919
nitrosomorpholine, 919–921
nitrosopiperidine, 919–921
nitrosopyrrolidine, 918, 919, 921
nitrous oxide
controlling in a dental operatory, 272–278
NOBE (Newfoundland Offshore Burn Experiment), 62–67
noise exposure
OSHA, ACGIH criteria compared, 924–928
truck drivers, 564–566
noise hazards. *See* hearing protection
noise reduction rating (NRR)
criticized, 264–271
nonfibrous particles
aluminum smelter workers and, 370–375
non-monomeric isocyanates. *See* polyisocyanates
Normandy, Mary Janet (book reviewed), 571
North American Free Trade Agreement (NAFTA)
health and safety standards, 929, 939
North Carolina
ergonomic initiatives, 957–959
North Carolina Ergonomics Resource Center, 959
Norwegian Standards Institute, 938
nuclear medicine technologists
exposure to airborne radiocontaminants, 202–204
exposure to metallic lead, 1124–1126
Nukus, NAS Young Investigator Program in, 1097, 1100, 1101
numerical exposure limits, limitations of, 34
numerical model(s), aerosol dispersion and capture, 134–141
*Nursing, Health, & the Environment* (Pope, Snyder and Mood, eds.), 1181

## O

occupational chemical asthma, 153
occupational exposure data and assessment.
*See also* specific substance
collection deficiencies, 801
integration sought, 802
occupational exposure limit(s) (OEL)
estimating for new chemical substances, 526–536
hydrogen sulfide, 464–468
metalworking fluid aerosols, 1149
reproductive health and, 641–642
occupational health and safety management systems
standards, 597, 929–935
occupational health and safety standard
international trade and, 937–940
prospects for establishing, 936–944
occupational health policy
role of science and social concerns, 1062–1065
occupational health standard
ISO standards as a voluntary approach to, 387–391
occupational hygiene. *See* industrial hygiene
*Occupational Hygiene* (Harrington and Gardiner), 967
*Occupational Hygiene* (Schoeman and Schroder), 1074–1075
occupational injury, disease and death
cost of, 985
estimate of, 984
in developing countries, 985–986
Occupational Safety and Health Administration (OSHA)
air sampling methods for HDI polyisocyanates, 154
blood borne pathogen exposure standard, 1048–1049
Cadmium Standards, 1019–1020
confined space standard, 1050
construction work, 953–955
docket submissions, advocacy of, 1076–1077 (LTE)
dose surrogates, refinement of recommended, 285–294
ergonomics, draft standard, 953–955
exposure limits
ammonia, 636
beryllium, 805
1,3-butadiene, 795–796
diisocyanate monomers, 905
polyisocyanates, not set for, 906
silica, 860 (LTE)
vapor phase hydrogen peroxide, 844
exposure to methylene chloride, 43
exposure to soluble uranium compounds, 615–616
feasibility analysis, 801
hearing conservation criteria, 924–928
hearing loss, criterion for recording occupational, 661–662
indoor air quality and environmental tobacco smoke, 285–294, 1076–1077 (LTE)
lead exposure standards, 1124
nitrosdimethylamine (NDMA) exposure, 919
process safety management, 767–768
reform of
AIHA views on, 325, 775–777
implications for, 934
third-party verification of health and safety programs, 387–391, 859–860 (LTE)
risk assessment practices, 792, 795, 798
office environments
baseline indoor air quality indicators, 1058–1062
cumulative trauma disorders, 849
dust mite allergens in, 573–574 (LTE)
Offutt Air Force Base, 610–614
OHSMS. *See* occupational health and safety management systems
oil mist
efficacy of machine enclosures in exposure control, 1173–1178
evaporation during laboratory measurement, 1137–1141
evaporation of multicomponent droplets, 1128–1136
exposure-measurement methods compared, 1149–1153
industrial collector efficiency, 1142–1148
oil spills, exposure during *in situ* burning, 62–67
oligomeric isocyanate species, 905, 907
opioid analgesics, exposure control limits, 34
oral temperature, as a heat stress indicator, 344–347
organics
contamination by in Central Asian republics, 1096
organic solvents. *See also* specific solvent
breath sampling for, 257–263
Proficiency Analytical Testing program, 295–303
organic vapors
released from evaporating metalworking fluids, 1128–1136
organic vapor sampling
air boundary layer effects and sampler calibration, 551–556
prototype instrument for measuring exhaled breath, 1103–1108

Organization for Economic Cooperation and Development (OECD)
hazardous waste production by members, 991
occupational health and safety standards, 929
OSHA.
*See* Occupational Safety and Health Administration

## P

paint spraying operations
air sampling methods evaluated, 153–160
solvent and particulate overspray concentrations, 304–310
total isocyanate sampling, 914–917
workplace protection factor study, 50–57, 166–174, 969–972 (LTE), 972–973 (LTE)
parkinsonism, 377
PARPs. *See* powered air purifying respirators
particle geometry and characteristics
air conditioner filter efficiency, 996–1001
fiber measurement, 820–824
influence on direct-reading aerosol monitors, 1017
influence on local exhaust capture, 134–141
influence on respirator efficiency, 348–355
respirator face seals and, 172–174, 972–973 (LTE)
respiratory exposure to manganese, 379
sampling filters and, 539–540
particulate exposure. ***See also*** airborne particulates
manganese in an urban environment, 376–380
spray-painting guns, 304–310
particulate fluoride, 370
passive sampling. *See* sampling methods
Patterson, Robert M., 207
Peeters, John P. (book reviewed), 571
PEL. *See* permissible exposure limits
*Penicillium*
air-conditioning systems and, 996–1001
beekeeper exposure to, 484–490
perchloroethylene
biological exposure indice for exhaled air, 258
detecting with surface-acoustic-wave (SAW) technology, 1103–1108
exhaled-breath sampling, 257–263
performance-based exposure control limit(s) (PB-ECLs)
categories described, 36
for pharmaceutical active ingredients, 33–42
general applicability, 41
Perlman, Gary (book reviewed), 761
permissible exposure limits (PEL) (OSHA).
*See also* recommended exposure limit (REL) (NIOSH); threshold limit values (TLV®s) (ACGIH)
ammonia, 636
assessment strategies. *See* exposure levels
cadmium, 1019
formaldehyde, 1060
metalworking fluids, lack of for, 243
methylene chloride, 43
reduction of, and the role of accuracy analysis, 450
sidestream smoke constituents, 287
silica, 574–575 (LTE), 860 (LTE)
uranium, 616
vapor phase hydrogen peroxide, 843
volatile organic compounds and indoor air, 1060
personal monitor(s)
continuous, evaluation of, 68–71, 665–668 (LTE)
heat stress, evaluation of, 650–657
personal protective equipment. *See* specific type
pesticides
impact in Central Asian republics, 1096, 1099, 1101
Petersen, Dan (book reviewed), 1074
Peto, Richard, 705
petroleum hydrocarbons
exposure during ***in situ*** burning, 62–67
petroleum oil mist
sampling methods compared, 537–541
petroleum oil vapor
sampling methods compared, 537–541
petroleum workers
exposure assessment, retrospective, 333–343
pharmaceutical active ingredients
performance-based exposure control limits, 33–42
pharmacokinetic modeling, physiologically based
biological exposure indices and, 23–32
compared to conventional pharmacokinetics, 24
explained, 24
Pheasant, Stephen (book reviewed), 967–968
phenol concentrations in urine, 29
phenolic compounds
exposure during fiberglass insulation manufacturing, 889–896
photographic industry
silver recovery, 1044–1046
physiologically based pharmacokinetic modeling
biological exposure indices and, 23–32
explained, 24
Pierce, James Otto III, obituary, 663
α-pinene, 634–640
pituitary lesions, in test mice, 712–716
"plausible conservatism," 791–792, 795, 799
plethysmograph, testing mice inside a, 712–716
pneumonitis, 485
pocket filters
efficiency in removing metalworking fluid mist, 1142–1148
Poland, industrial hygiene in, 1096
polarity
effect on respirator filter breakthrough time, 717–723
pollution prevention
international cooperation, 993
international standards and, 387–388
polycyclic aromatic hydrocarbons, 370, 1150
polyisocyanates. ***See also*** diisocyanates; isocyanates
air sampling methods evaluated, 153–160
derivatization reagents for, 905–913
exposure standards, 906
short-term exposure limit, 153, 154
polymer(s)
use in organic vapor sensing, 1104
polyurethane manufacturing
materials in, 905–906
polyvinyl chloride filters
metalworking fluid sampling with, 1137–1141
Pope, Andrew M. (book reviewed), 1181
posture. ***See also*** ergonomics
analyzing via computer, 961–963
potassium soap
exposure limit predictions, 239–244
potato processing
antigen sampling during, 567–570
powder handling, manual
controlling exposure during, 356–364
powered air purifying respirators
assigned protection factor, 736–739
predicting exposure limits
metalworking fluids, 239–244
new chemical substances, 526–536
President's Commission on Risk Assessment and Risk Management, 792
Prevention and Control Exchange (PACE) Programme (WHO), 993
process and production methods
trade control through regulation of, 939
process safety management
AIHA white paper, 767–768
Proficiency Analytical Testing program
asbestos analysis reference material, 741
asbestos/fiber samples changed, 1179
cadmium samples changed, 1179
evaluation method changed, 80
laboratory reports changed, 79
organic solvents
new ones to be introduced, 1180
time trends in analyzing, 295–303
passive monitors, 1180
proficiency ratings and statistics, 80, 319, 587, 1180
prostaglandins
exposure control limits, 34
protective clothing
disposable suits compared, 1051–1054
heat stress indicators while wearing, 344–347
heat stress monitor use with, 650–657
protective clothing, encapsulating.
*See* encapsulating protective clothing
***Proteus***
exposure to from metalworking fluids, 1161
***Pseudomonas***
exposure to from metalworking fluids, 1155, 1159, 1161
***P. alcaligenes***
exposure to from metalworking fluids, 1161, 1165
***P. pseudoalcaligenes***
exposure to from metalworking fluids, 1161, 1164, 1165
public health, in developing countries, 991

## Q

quality assurance
asbestos analysis reference material, 741–745
quality management. ***See also*** specific standard
industry trends, 930

## R

radiation protection
nuclear medicine technologists and, 202–204
radiocontaminants, exposure to airborne
nuclear medicine technologists, 202–204
***Radio-Frequency and ELF Electromagnetic Energies: A Handbook for Health Professionals*** (Hitchcock and Patterson), 207
Randolph Air Force Base, 610–614
reagents
for isocyanate derivatization, 905–917
recombinant DNA
research guidelines and hazard assessment, 382
recommended exposure limit (REL) (NIOSH).
*See also* permissible exposure limits (PEL) (OSHA); threshold limit values (TLV®s) (ACGIH)
nitrous oxide, 272
silica, 860 (LTE)
rectal temperature
as a heat stress indicator, 344–347
recycled process washwater. *See* water recycling
***Reducing Toxics, A New Approach to Policy and Industrial Decisionmaking*** (Gottlieb), 311–312
refractory ceramic fibers, measuring, 820–824
Registrar Accreditation Board (RAB), 389
Registration Accreditation Board (RAB), 930
Registry of Toxic Effects of Chemical Substances, 286, 641, 642
regulatory cost accounting, 796
regulatory reform. *See* specific issue
relative humidity
effect on airborne mouse allergens, 634–635
effect on making replicate filter samples of asbestos fibers, 741–745
effect on monitoring vapor phase hydrogen peroxide, 843
indoor air standard, 1060
renal abnormality
uranium, occupational exposure to, 616
reproductive health hazards
screening method, 641–649
reproductive toxins, potential, 643–646
respirators
ANSI assigned protection factors, 735–740
factors affecting service life, 717–723, 809–819
fit testing, 576–580 (LTE)

miners self-reported use of, 191–195
penetration by airborne microbes, 348–355
workplace protection factor studies, 166–174, 395–396 (LTE), 396–399 (LTE), 972–973 (LTE)
respirators, half-facepiece. *See* half-facepiece respirators
respiratory irritation
beekeepers and, 484–490
fiberglass insulation manufacturing, 889–890
metalworking fluids and, 239–244, 1155
animal studies, 1168–1172
respiratory protection
and tuberculosis infection, 16–22, 583 (LTE)
restaurant and bar workers
environmental tobacco smoke and, 747, 748
rhodizonate spot-test kit (Merck EM Quant), 161–165
risk assessment
compared to industrial hygiene, 423, 431
government use of, debated, 791–802
industrial health, model proposed, 423–435
role of, in the risk management process, 231–237
subject of Cummings Memorial Award Lecture, 231–237
*Risk Assessment and Cost-Benefit Act of 1995* (H.R. 1022), 791–793, 800, 801
risk communication
effective, 186–190
in an industrial hygiene risk assessment model, 432, 575–576 (LTE)
in developing countries, 990
*Risk Communication Act of 1993* (H.R. 2910), 791
risk management process
risk assessment and, 231–237, 423–435
risk models, transmission. *See* transmission risk model(s)
Robins Air Force Base, 1050–1051
rock wool production plants
airborne fibers, 823
Rocky Flats Environmental Technology Site, 804–808
rodent allergens, 634–640
Rose, Vernon E., 5, 859–860 (LTE)
Royko, Mike, 795
rubber curatives and additives, nitrosamine formation, 922
rubber workers
nitrosamines exposures, 918–923
selenium levels in the serum of, 72–75
Russia, industrial hygiene in, 1096

## S

safe handling practices
performance-based exposure control limits, 33–42
*Safety by Objectives* (Petersen), 1074
salt bath curing process
nitrosamines, 918–923
sampling. *See also* specific substance; specific type
air boundary layer mass transfer resistance, 551–556
sampler validation, 1115–1123
sampling methods
adsorbents for selective, 128–133
efficiency compared, 537–541
fixed airhead, 804–808
for fibers, 820–824
metalworking fluids, 1137–1141
radial diffusion, 897–904
schlieren imaging technique, Vol. 57 No. 3 cover, 263
Schoeman, Johannes (book reviewed), 1074
Schroder, Harald (book reviewed), 1074
science, role in occupational health policy, 1062–1065
Scott, Ronald M. (book reviewed), 571
seat design, vibration exposure, 837–842
secondhand smoke. *See* tobacco smoke, environmental
selenium, serum levels of workers exposed to vulcanized rubber, 72–75
self-contained breathing apparatus (SCBA), 736, 738–739
Self Help for Hard of Hearing People, Inc., 661
*Semiconductor Industrial Hygiene Handbook* (Williams and Baldwin), 393–394
sensory irritancy, estimating, 712–716
shoes, workplace safety and, 825–831
Shook, Hardy & Bacon, 1076–1077 (LTE)
short-term exposure limit (STEL). *See* exposure levels
Sibata PCD-1 (dust monitor), 557–563
"sick building syndrome," 485, 573–574 (LTE), 634
sidestream smoke. *See also* tobacco smoke, environmental
permissible exposure limits of constituents in, 287
silica
exposure limit comparisons, 860 (LTE)
fume emission studies, 1024–1034
permissible exposure limits (PEL), 574–575 (LTE)
silicon
exposure to in abrasive manufacturing, 753–755
workplace protection factors provided by respirators, 166–174
workplace protection factor study, 50
silver recovery
hydrogen cyanide gas emission, 1044–1046
SKC Inc. diffusive sampler validation program, 1115–1123
skeletal muscle(s)
hydrogen sulfide, effects of inhaling, 464–468
skin exposure
role in risk assessment, 802
slag wool production plants
airborne fibers, 823
slipperiness, assessment of, 822–831
slips, workplace safety and, 825–831
Slovakia, industrial hygiene in, 125
Slovenia, industrial hygiene in, 1096
smelter workers, aluminum
inorganic particles in the lungs of, 370–375
Snyder, Meta A. (book reviewed), 1181
social concerns, role in occupational health policy, 1062–1065
Soderberg process, chemical hazards at plants using, 370
sodium hydroxide, 44
sodium sulfonate, exposure limit predictions, 239–244
solvent desorption, diffusive samplers for, 897–904
solvent(s). *See* industrial solvents
solvent(s) exposure, spray-painting guns, 304–310
solvent(s), organic. *See* organic solvents
Soviet Union (former).
*See* specific country; specific region
spectrometer, effectiveness of, 348–355
spot test kits
lead, airborne, 161–165
spray painting. *See* paint spraying operations
spray-painting guns, types compared, 304–310
standards
AIHA and development of, 229
AIHA and international, 117
Britain, 597
ergonomics, OSHA draft, 953–955
ventilation for indoor air quality, 1054
Standards Completion Program (NIOSH)
pros and cons of, 1116
*Staphylococcus*
exposure to from metalworking fluids, 1161
static electricity. *See* electrostatic precipitation and effects
statistical methods
for accuracy analyses, 440–455
use in assessing workplace exposures, 6–15
*Statistical Tools of Safety Management* (Walters), 495
stellite blades
exposure to airborne metals during manufacturing, 196–201
sterilization
vapor phase hydrogen peroxide exposure during, 843–848
strength tests
as a predictor of lifting capacity, 456–463
Stricoff, R. Scott (book reviewed), 311
strontium
workplace protection factor study, 50, 969–972 (LTE)
subtilisin(s)
threshold limit value, 356
sugar industry workers
exposure to airborne microbes, 1002–1012
sulfur
exposure to from metalworking fluids, 1154–1162
sulfur dioxide, 370
Superfund sites
risks at, 792–793
surface-acoustic-wave (SAW) technology
described, 1103–1104
field-use for breath analysis, 1103–1108
instrumentation using, 1104
*Surface and Dermal Monitoring for Toxic Exposure* (Ness), 658
surgical mask(s)
penetration by airborne microbes, 348–355
tuberculosis transmission, 583 (LTE)

## T

Tajikistan, 1097
Tashkent
earthquake damage, 1099
NAS Young Investigator Program, 1097
Tedlar® bags
exhaled-breath sampling with, 257–263, 1103–1108
TEM. *See* transmission electron microscope (TEM)
tendinitis, 849, 1109
tendon disorders, 849
tenosynovitis, 849, 1109
terpenes, 634–640
α-terpineol, 634–640
testing proficiency
environmental lead, 208–215, 497–505
organic solvents, 295–303
*Textbook of Military Medicine*, 624
theatrical smoke, 1072
thermal desorption, diffusive samplers for, 897–904
*Thermoactinomyces*
*T. sacchari*
sugar mills, 1002–1012
*T. vulgaris*, 1003
thiocyanate(s)
decomposition during electrolysis, 1044–1046
third-party verification of health and safety programs, 387–391, 859–860 (LTE)
third-party verification of ISO standards
process explained, 930–931
thoracic fraction, use in fiber measurement, 820–824
threshold limit values (TLV®s) (ACGIH).
*See also* permissible exposure limits (PEL) (OSHA); recommended exposure limit (REL) (NIOSH)
ACGIH position on use of, 988
ammonia, 636
carbon monoxide, 621
heat stress while wearing protective clothing, 58–61, 650–657
human variability and, 23–32
hydrogen cyanide gas, 1046
methylene chloride, 43, 575–576 (LTE)
mixture formula and, 574–575 (LTE)
mixtures, 243
refined oils, 1137, 1150
silica, 574–575 (LTE), 860 (LTE)
standard setting process and organizational unification, 709
subtilisin(s), 356
tissue deformation, explained, 849
titanium
workplace protection factor study, 50, 969–972

(LTE)
tobacco smoke, environmental
cardiovascular disease and, 285–294, 1076–1077 (LTE)
chemical analysis of, 286–288
occupational exposure of nonsmokers, 746–752
toluene, 44, 47
biological exposure indice for exhaled air, 258
respirator service life, 809–819
toluene diisocyanate
monitoring devices for, reviewed, 68–71, 665–668 (LTE)
2,4-toluene diisocyanate, 907
Toxic Effects of Chemical Substances, Registry of, 286
Toxic Release Inventory, 801, 802
*Toxic Substances Control Act* (TSCA), 526–527, 801
tracer gas
measuring ventilation efficiency, 1054–1058
traction, foot
shoe wear and, 825–831
trade agreements. *See also* global economy
occupational health and safety standards as a barrier to, 936–944
train operators
vibration exposure, 837–842
transfer efficiency
spray-painting guns, 304–310
transmission electron microscope (TEM)
measuring particle size, 1024–1034
transmission risk model(s)
tuberculosis, occupational, 16–22, 583 (LTE)
triazine
exposure limit predictions, 239–244
trichloroacetic acid, 28–30
1,1,1 trichloroethane
exhaled-breath sampling, 257–263
trichloroethanol, 28–30
trichloroethylene
biological exposure indice for exhaled air, 258
detecting with surface-acoustic-wave (SAW) technology, 1103–1108
variability in exposure indices, 23–32
truck drivers
noise exposure, 564–566
tryptamine
as a reagent for isocyanates, 905–917
TSI 8510 (dust monitor), 557–563
TSI 8520 DustTrak (dust monitor), 1013–1018
tuberculosis. *See also Mycobacterium tuberculosis*
CDC control guidelines, 542, 583 (LTE)
occupational transmission risk model, 16–22, 583 (LTE)
ultraviolet light irradiation for controlling, 543
Turkmenistan, occupational and environmental health in, 1096–1102
tympanic temperature
as a heat stress indicator, 344–347
typing
fatigue, 849–854
relationship between strike force and speed, 1109–1114

## U

$UF_6$. *See* uranium hexafluoride
Ukraine, industrial hygiene in, 1096
ultrafine aerosol(s)
measuring particle size, 1033
Unification Task Force, 709
United Nations Conference on Environment and Development (1992), 992
United States Air Force
lead-based paint policy and control, 611
United States Army
Corburn-Forster-Kane derivation error, 621–625
United States Army Center for Health Promotion and Preventive Medicine, 1072
$UO_2F_2$. *See* uranyl fluoride
upper extremity disorders
typing and, 1109
uptake rate
diffusive sampler geometry and, 897–904
uranium
contamination through airborne concentration, 615–620
contamination through surface concentration, 615–620
permissible exposure limits, 616
toxicity of, 615
uranium exposure pathways
regression analysis, 618
uranium hexafluoride
properties of, 615, 618
uranyl fluoride
properties of, 615, 618
urban environment
manganese exposure in, 376–380
urinary metabolite concentrations
suitability of as a biological index, 28
urine
cadmium concentration and exposure, 1019–1020
uranium concentration and exposure, 616–620
Uzbekistan
infant mortality, 1097
life expectancy, 1097
occupational and environmental health in, 1096–1102

## V

vanadium
exposure to in abrasive manufacturing, 753–755
vapor mixtures
effect on respirator service life, 717–723
released from evaporating metalworking fluids, 1128–1136
vapor phase hydrogen peroxide
advantages of, 843–844
real-time monitoring techniques, 843–848
toxic effects of, 844
vapor polarity
effect on respirator filter breakthrough time, 717–723
*Variable Air Volume Systems for Environmental Quality* (Chen and Demster), 857
Vasak, Vladimir
William P. Yant Award lecture, 119–127
ventilation. *See also* local exhaust capture
during animal cage cleaning, 634–640
efficiency measurement, 756–759, 1054–1058
exposure intensity estimates and, 542–550
influence on environmental tobacco smoke exposure, 751
methylene chloride exposure control and, 43–49, 575–576 (LTE)
outdoor air introduction guidelines, 1060
vibration
exposure limits, 476–479
seat design, 837–842
Vincoli, Jeffrey W. (books by, reviewed), 77, 206
viscous deformation
of human tissue, 849
VOCs. *See* volatile organic compounds
volatile hydrocarbons
exposure during *in situ* burning, 62–67
volatile liquid(s)
evaporation in a flowing airstream, 519–525
volatile organic compounds (VOCs)
in animal facilities, 634–640
indoor air, 1060
Voluntary Protection Programs (OSHA), 933, 938

## W

Wagne, Travis P. (book reviewed), 206–207
*Wall Street Journal*, 1076–1077 (LTE)
Walters, Douglas B. (book reviewed), 311
Walters, Henry A. (book reviewed), 495
water, drinking. *See* drinking water
water quality control
eyewash stations, 626–633
water recycling
process washwater and bacteria, 890
water resource management
in Central Asia, 1097–1102
welding
exposure to airborne metals during, 196–201
welding fume, 1033
well-mixed room concept, 542–550
wet bulb globe temperature adjustment
research reviewed, 58–61
wet grinding
exposure to airborne metals during, 196–201
Wheeler model, 717–723
whole-body vibration
adjusting the evaluation limit for, 476–479
seat design, 837–842
"Who's Exaggerating?" (Finkel), 798
wild blueberries, harvesting, 946–948
Williams, Michael E. (book reviewed), 393
within-worker exposure variation.
*See also* human variability
assessment strategies, 724–734
cobalt, 365–369
fiberglass insulation manufacturing, 889–896
heat response, 651
Wogalter, Michael S. (book reviewed), 761
work ability
maintenance of, 963–965
workplace protection factor study(ies)
foundry operations, 166–174, 972–973 (LTE)
half-mask respirators, 395–396 (LTE)
paint spraying operations, 50–57, 153–160, 969–972 (LTE)
relation between in-mask and ambient concentration, 396–399 (LTE)
respirators
atmosphere supplying, 739
negative pressure air purifying, 737
powered air purifying, 739
workplace safety
cumulative trauma disorders, 849
shoe wear and, 825–831
work practices. *See also* ergonomics; trade agreements
between-worker exposure variation and, 469–475
formaldehyde exposure, 599–609
modeling task contribution to contaminant concentration, 599–609
World Bank, 984, 989
World Health Organization (WHO), 984, 988, 993
formaldehyde exposure guidelines, 1061
occupational health and safety standards, 929
occupational hygiene goals, 992
World Trade Organization
dispute resolution mechanism, 939
occupational health and safety standards, 937–941
wrist splints
OSHA and, 955, 956

## X

*m*-xylene
exhaled-breath sampling, 257–263
respirator service life, 809–819

## Y

Yant (William P.) Award Lecture, 119–127, 984–995
yellowcake dust
exposure to, 616, 619

## Z

zinc
exposure to in abrasive manufacturing, 753–755
workplace protection factors provided by respirators, 166–174, 972–973 (LTE)